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ARTIFICIAL PNEUMOTHORAX IN THE TREAT- MENT OF PHTHISIS

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PART II

(Continued from page 287)

THE methods of producing artificial pneumothorax are those of the three pioneers in the field. These have been subject to slight modification of apparatus and technique by numerous later workers, and thereby the ease and safety of the operation have been much improved. Forlanini's method^{10, 22} is that of puncture with a small aspirating needle which is connected by tubing with a vessel containing nitrogen. The gas is displaced by water subjected to pressure produced by means of a rubber bulb. Originally he used a manometer which only showed the pressure at which the gas was introduced. The point of the needle was determined largely by art, by the free entry of gas under slight pressure, or by the automatic aspiration of gas because of the negative pressure present in the pleural cavity, and, when in doubt, by attaching a syringe to the needle and using suction to determine whether or not its point was in a blood vessel. Latterly he has adopted manometric control. Murphy⁸ originated a very similar method. He first punctured the derma with a tenotomy knife, introduced a trocar, with cannula attached to a vessel containing nitrogen under hydrostatic pressure produced by gravity, withdrew the trocar when the rib was reached, and then pushed the cannula, with gas pressure already turned on, into the pleural space. When the parietal pleura was punctured, gas would flow freely unless there were adhesions. These original methods were obviously liable to cause

gas embolism, and did so. This danger led Brauer⁴³ to adopt a method of dissection down to the parietal pleura. To this method he has given Murphy's name as well as his own. The perforation of the pleura is then made by a blunt trocar with an opening in the side and gas is introduced, controlled by manometric observations. For refilling the pleural cavity he simply punctures with an ordinary aspiration needle. He and Spengler, his associate, are emphatic upon the need of using this "open" method for the original introduction of gas. There are obvious disadvantages beside the greater possibility of infection. Numerous infections of the wound and pleural cavity have occurred, four cases of pyothorax in eighty operations is one record (Saugman⁴⁴), and accidents from gas embolism have, nevertheless, happened. A majority of cases of gas embolism have by both methods occurred during refills. Brauer's method has not been able to compete successfully against that of Forlanini as modified by Saugman⁴⁵ and others. The latter uses a water manometer so connected that it gives accurate information at all times about the conditions at the needle point and the pressure of gas.

The home-made apparatus here illustrated has proved entirely practical and we were obliged to make it from materials at hand or easily obtained. It embodies principles of construction developed by Lillingston,¹¹ and Robinson and Floyd.¹² Most continental apparatus are made with glass parts which cannot be easily replaced if broken, and in most of them pressure on the gas is made with a double rubber bulb. By raising a bottle containing water connected with the gas reservoir the pressure is more easily regulated than by a bulb.

The simple arrangement of syphonage enables anyone to make an apparatus with ordinary bottles. A sliding shelf was formerly used for raising the water bottles; but the levels of liquid are more readily adjusted by means of the rod and set-screw. Good black rubber tubing with fairly stiff wall will not require renewal under eighteen months. It must fit all connexions snugly; three-sixteenths inch is a convenient size. When not in use, open ends are stopped, where necessary with glass rods rather than by clamps.

Hoffman's clamps, wired to the walls, have proved better than gas cocks and may always be released when the apparatus is not in use. A gas cock (A) has been placed on the syphon tube (B) in place of a clamp only in order to save the tubing. A three-way cock may be preferred to the arrangement of clamps (C D E) used here; but it has disadvantages. If one should be used the boring

of it must permit the gas reservoir, manometer and needle to be connected at the same time. The three-way cocks in some of the apparatus suggested do not permit gas to flow and intrathor-

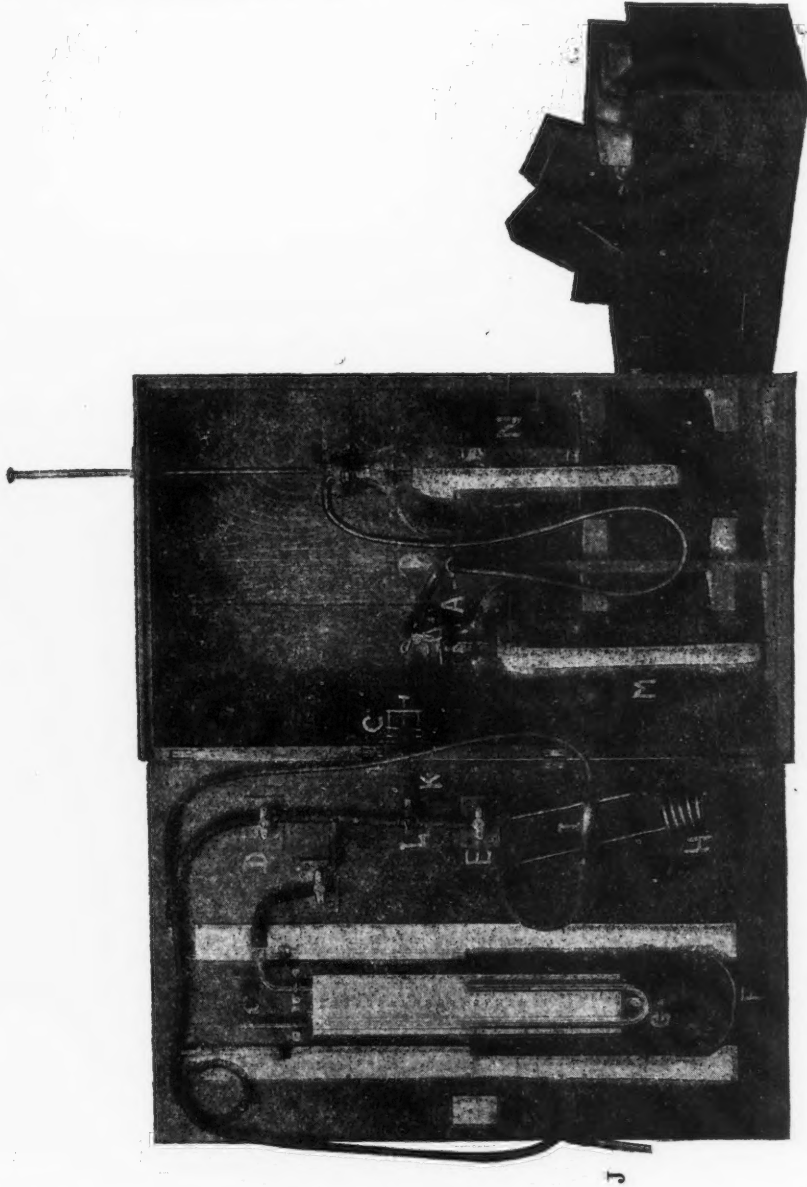


Fig. 1—Authors' Portable Apparatus

acic pressures to be registered simultaneously. Any interruption of the record of intrathoracic pressure might be highly dangerous. The clamp (C) which controls the flow of gas from the reservoir

allows a very nice adjustment of the rate of flow, quite independent of the pressure exerted by the water. The clamp (D) to the water manometer permits the reduction of oscillations to a minimum, quite as well as the similar clamp placed on the tubing between the limbs of the manometer, as suggested by Würtzen and Kjer-Petersen⁴⁶ for obtaining the mean pressure.

Saugman's long water manometer (F) along with a mercurial manometer (G) is safely carried on the door. The bore of the manometer tubes should be about 3 mm. It is desirable that only a very small amount of air should be given up by the yielding water column. The ordinary glass tubing we have used is rather too large. The water in the manometer is coloured with picric acid which does not fade as the aniline dyes do. The mercury manometer is useful if the patient is inclined to cough. (1 cm. Hg. equals 13.6 cm. H₂O.) Formerly it was used for high pressures which have now been largely abandoned. It is of large size in order to replace the water manometer in case of need. Both the manometers are stoppered with corks and the clamps closed for travelling.

The coil of copper tubing (H) can be placed in an ordinary jug filled with water at about 120° F. Brauer urges that warmed gas should be used to prevent pleural shock, as one of his misadventures could be attributed to the use of cold gas. This might be a possibility where gas is introduced into the pleural cavity as in Brauer's initial operation, when the parietal pleura is exposed by dissection. It is an improbable accident, however, when the needle penetrates the chest wall as, even if the room were chill, the gas, because of its low specific heat and the good conduction of the metal, would be warmed by the time it entered the pleura. We have, nevertheless, made a number of experiments in which we have closely reproduced actual conditions as to chest wall and body temperature, and found that with a room temperature of 66°F., the rate of flow of gas 1 c.c. per second, and the coil at varying temperatures from 0° to 50°C. the maximum variations of a thermometer, upon which the entering gas impinged, were not more than 0.6°C. after 300 c.c. had passed. At room temperature, without a coil, a flow of 300 c.c. in one minute caused a fall of 0.5°C.

The filter (I) is a glass tube tapered at the ends, packed lightly with cotton. It is baked in the oven and a number of them are kept on hand in large test tubes. A second filter into which a few drops of peppermint oil have been poured can also be attached readily if it should become necessary to have the information afforded by an odorous gas. The tube connecting the filter with the

needle may be stoppered with a sterile glass rod (J) when the needle is detached. The stoppered end of the tube is simply dropped into an antiseptic solution to await attachment of the needle. Thus with the filter detached at the coil the essential sterile part of the apparatus may be kept sterile. When originally set up, and occasionally afterwards, all the apparatus is sterilized. The filter is frequently changed and the tube to the needle is frequently boiled. It would be an advantage to have a sterile filter between the tubing (K) and the "T" (L), as at this point the tubing must be detached in order to close the door, and to charge the reservoir.

When the reservoir is to be charged with gas the gas bottle (M) is filled with bichloride solution, or with freshly boiled water to which 2 drachms of pyrogallie acid are added to absorb any remaining oxygen, and this is displaced into the second bottle (N) by the gas. Nitrogen is most conveniently obtained in cylinders,* or may be made with but little trouble,† and is passed through bichloride solution in a wash bottle before it enters the gas bottle through the tubing which has been detached at the "T". It is questionable whether nitrogen has any superiority over air. According to Webb, Gilbert, James and Havens,⁴⁸ the nitrogen supplied in cylinders is often far from pure, and, moreover, after twenty-four hours the analyses of gas withdrawn from the pleural cavity show no material difference when either pure nitrogen or air is used. Oxygen is now largely used for the initial inflation and apparatus are made, or may be improvised, for the use of both gases. Experiments have shown that gas embolism may follow the use of oxygen; but no cases of fatal embolism have been reported by those who use it (Moreland⁴⁹). This may, of course, be explained merely by improved technique. We have usually used air for the first inflation.

The special needles are becoming almost as numerous as the

*Nitrogen in cylinders may be obtained from L'Air Liquide Association, First Avenue and Ernest Street, Maisonneuve, Montreal. (We have not found that this gas contains any demonstrable amount of oxygen.)

†Nitrogen may be obtained from air by absorbing the oxygen with alkaline pyrogallie acid solution. One gram of the pyrogallie acid will absorb the oxygen from 100 c.c. of air in two hours, approximately. For each gram of pyrogallie acid, 10 c.c. of 10 per cent. caustic potash should be used. The bottle in which the oxygen is to be absorbed should be connected by a syphon with another bottle containing water. The bottles of the apparatus will serve admirably.

The decomposition of urea by sodium hypobromite solution or of a mixture of solutions of sodium nitrite and ammonium chloride by heat are other methods. Boynton⁴⁷ considers the latter much the easiest and most economical of all methods as 20 gm. of the combined chemicals yield as much nitrogen as 600 gm. by the absorption method.

operators. For all-round work that of Floyd* has many features to recommend it. It should be obtained in two sizes, the smaller one being much more desirable for refills. We prefer the butt to be so made that a "Record" syringe will fit it. The needle designed by Kuss†⁵⁰ is ingenious and very safe for the initial operation. It is No. 3 Charrière, rather smaller than Floyd's. Moreland⁴⁹ highly recommends the small platinum needle of Braun's‡. We have found it very useful for refills; but it has some disadvantages. Except for the initial operation we have a liking for Saugman's|| simple needle with a rather sharp point. Modifications of the point by Lillingston,|| and Morgan||⁵¹ present some advantages for the initial operation. The bore of the needle will modify the excursions of the manometer to some extent.

All instruments are sterilized by boiling. Dry sterilization is convenient where there are facilities for it. The needles are transferred to alcohol to help their drying later, and remain there until connected with the apparatus. Gas is run through the needle when it is attached to the tubing until its bore is quite dry, the point being wiped from time to time on sterile gauze. A quick fall of the manometer to 0 after the gas is shut off shows that the bore is clear. A dry needle is essential.

For refills especially, it is convenient to have a stop on the needle. Baldwin's guard* is useful; but we find three-eighths of an inch of a soft rubber No. 3 stopper, with a small perforation so that the needle is tightly gripped, the most convenient check.

"Record" syringes of 2 c.c. content with two-inch 20 gauge needles are most useful, both for the anæsthetic and to serve as aspirators, when in doubt as to the position of the needle point. A tenotomy or cataract knife, a tube of ethyl chloride and a local anæsthetic are essential. Tincture of iodine, brandy, a syringe loaded with ether, and a faradic battery, if possible, should be on hand.

A freshly prepared 1 per cent. solution of novocaine is generally recommended as the local anæsthetic. The writers have found it convenient to keep a sterilized solution in a rubber-capped vaccine bottle. The cap is wiped with concentrated lysol before the needle is introduced. The solution used is novocaine 1 per cent., adrenalin solution (1-1000) 10 per cent., phenol 0.25 per cent., sodium chloride 0.85 per cent. The ampoules of eucaïne and adrenalin, and of

*Codman & Shurtleff, Boston.

†Collin, Paris.

‡C. Nicolai, Hanover.

||Allen & Hanbury, London.

quinine and urea, which can be purchased, are also very convenient, and both have given satisfactory anæsthesia.

Since the precautions in the technique of the operation are mainly for the avoidance of possible serious misadventures, both immediate and remote, these may now be conveniently discussed before the details of the operation are further considered.

During the operation, or shortly following the withdrawal of the needle, a group of symptoms may arise which, while alarming, may be transitory; or they may become more pronounced during a period of hours with either gradual subsidence and recovery, or a fatal ending; or they may be immediately fatal. These symptoms vary in number, degree and combination.

They are mainly slight faintness, pallor, cyanosis, startled cry, bradycardia or tachycardia, disturbances of respiration, dilation of the pupils with loss of reflexes, transitory blindness, nystagmus, loss of consciousness, mottling of the skin, clonic and tonic spasms, facial paralysis, paralysis localized or pronouncedly one-sided, laryngeal spasm or paralysis, anæsthesia and paræsthesia.

The grouping of the symptoms in any one case may be confusing as to their origin, and their cause has been ascribed to different pathological conditions. In the discussion of cause, the prejudices of the critic have possibly at times induced too broad generalization. The Italian and French observers lay stress upon the reflexes arising from pleural shock and consider "pleural eclampsia" or "pleural reflex" the cause in most instances. German opinion, led by Brauer,⁴³ is strongly against such an explanation and ascribes most serious happenings to gas embolism, excepting, possibly, relatively slight symptoms and laryngeal spasm, which may be due to reflex causes. Saugman⁵² also supports this view and holds that shock may only be accepted as an explanation when embolism can be definitely excluded. Proof of cause is difficult to obtain as the fatalities have been relatively few and not all these have come to autopsy, and even when they do, there are many obvious possibilities of error.

There is fairly abundant clinical proof of shock or reflex as a cause for various combinations of symptoms. This is probably due to the effect of the irritation of the operation upon an exalted nervous sensibility. Floyd²⁵ mentions one case of fatality, after he had anæsthetized the pleura, on the introduction of the needle, although no gas had been turned on. Both he and Lillingston⁵³ regard shock as the most serious danger of the operation. This

explanation is confirmed by occasional instances of death which have been recorded during or following diagnostic puncture, aspiration, or irrigation of the pleural cavity, and ascribed to shock. Sundberg⁵⁴ brings some support to the reflex theory as a cause of grave symptoms of the central nervous system from exhaustive research at autopsy. He suggests that a reflex spasm of the cerebral arteries produces an ischæmia which is followed by thrombosis and softening.

Gas embolism may arise because the gas is allowed to flow when the needle point is in a blood vessel in the lung, or in a pleural vessel which opens into the pulmonary circulation. When the lung has been wounded, especially if it is infiltrated and if pleural adhesions exist, physical and physiological conditions may be such that gas can be aspirated from the needle by the yielding of the water column, and embolism may possibly occur without the gas reservoir being connected. When the lung has been wounded alveolar air may also be aspirated into the vessels, and gas may also be pressed into the vessels of such a wound from the gas cavity. If pleural adhesions are torn apart a vessel may aspirate gas or allow gas to be pressed into it. Guyot-Bourgs⁵⁵ has shown that large venous plexuses may be present in recent adhesions and that there may be some communication through them between the systemic and pulmonary circulations. It is possible that gas may enter a vein in the chest wall which has been wounded by the needle and thus find its way to the left heart. During the removal of the stylet or the clearing of an obstruction in the needle, air may be aspirated if the needle point is in a vein. Gas embolism is then at all times an imminent possibility, unless proper precautions are taken, and the danger is greatest when it is difficult to find a free pleural space, or in attempting to form one when adhesions are present. Its occurrence in the past can usually be traced to some error in technique and it is found that warning has not been taken from unsatisfactory manometric indications. The greater number of fatalities have occurred at refills. Here the depth of the needle and the presence of a known gas cavity may have been considered sufficient evidence that the needle point was in proper position, and, despite the uncertain manometric reading, gas has been turned on, with an accident resulting. The needle may have entered a reëxpanded lung unobserved, the needle may have slipped out of the cavity, or it may have impaled a vessel and have been invaginated by the pleura (Lillingston⁵³).

Fatalities from the operation were naturally more frequent

in the early days of this treatment. Some operators had more misadventures than others, possibly because of the selection of more difficult cases, or of some error in technique, or of simple bad luck. The actual number of mishaps is, however, small in proportion to the number of operations, and fatalities form only a small proportion of the mishaps. Hansen⁵⁶ collected 31 cases, reported in the literature up to 1912, and there were only 8 deaths. In 10,000 operations reported by Forlanini⁵⁷ on 134 patients, 2 fatalities occurred from gas embolism and 12 other cases had serious, but not fatal, symptoms. In 5,000 operations by Saugman⁵⁸ on 186 patients, 2 fatalities occurred at a first injection.

Various experiments on animals and upon the cadaver have given results both supporting and disproving each side; but the conditions of the experiments may often be criticized. They have dealt with the possible injury to the lung by the needle, the production of shock by the injection of irritating substances and the injection of various gases. It has been shown that the amount of gas necessary to produce embolism may be very small indeed, only a few centimetres.

Wever,⁵⁹ inspired by Brauer to duplicate as nearly as possible the conditions existing in man, and working with competent collaborators, demonstrated experimentally in monkeys, gas bubbles in the vessels of the fundus oculi, and gas bubbles in cerebral vessels when the animals were promptly killed; but conditions of the brain very similar to those described by Sundberg if the animals were allowed to die. He mentions cases in man, also, which showed gas emboli in both the fundus oculi and cerebral vessels following aspiration of air into vessels during severe lung operations.

Another cause of embolism, which may possibly arise from the operation because of the compression of the lung, is the detachment of a venous thrombus (Brauer and Spengler). The symptoms will probably come on some hours after the operation. It is of very rare occurrence.

Accidental pneumothorax on the treated side may be an occasional, immediate, or remote result. The needle may enter a cavity and cause a pneumothorax. In one of our cases such an accident followed the introduction of the anæsthetizing needle over an apparently healthy part of the lung, and was probably due to the tearing of the lung on the needle point from respiratory movement. A large pneumothorax rapidly became established which was then maintained by inflations. There has been no ill

result.* It may be caused, also, by too great pressure causing an adhesion to tear away from the lung; from too great intrapleural pressure upon a weak spot in the compressed lung; or because the intrapleural pressure is allowed to become too low and atmospheric pressure causes a soft spot in the lung to rupture into the pleural cavity. A purulent effusion may follow all such accidents.

Other accidents which are caused by errors of technique, or which may be unavoidable, and symptoms and complications resulting from the operation, and more or less inevitable, will be taken up later.

The site for the introduction of the needle must be carefully chosen, if possible where the lung is free or relatively free from disease, and where it is movable. Painsstaking physical examination is necessary. The fluoroscope is undoubtedly a help; but it is of secondary value to physical examination. Percussion is the method of most use but cannot be entirely relied upon, as there may be a deceptive shifting of the lung resonance at the lower margin during respiration when there are both parietal and diaphragmatic adhesions (v. Murhalt⁶⁰). In the absence of shifting resonance the pleural space may, on the contrary, be free. This is quite possible after pleural effusion. For the left side, the modification of resonance over the heart during respiration may prove helpful in forming a decision about a free margin. We have had best luck between the scapular and postaxillary lines, below the level of the angle of the scapula, when there have been adhesions, since there is greater possibility of finding fissures or free spaces at this point.

To avoid the likelihood of pleural reflex, the patient should not be operated upon when in an exalted nervous condition, or near the menstrual period. Reflex excitability should be reduced by the giving of a hypodermic injection of morphia one-sixth grain, or of omnopon one-third grain, half an hour before the operation, or, when it is known that opiates may not be well borne, by giving chloral hydrate 7 to 10 grs., with half a drachm of bromide, an hour beforehand. These should be used during the first few operations. Local anæsthetics must be freely used at every puncture. The operation should not take place until some hours after food. The patient should not be allowed to become unduly disturbed, possibly not removed from his bed, and he should be placed in a comfortable position. At the first seance, not more than two punctures should be made.

* This accident occurred after the first part of this paper giving our results had been completed.

The posture of the patient is important as intrapleural pressures change with position and vary with site. The horizontal position, therefore, is usual. The spot for insertion of the needle should be the topmost point of the circumference of the thorax in order that the gas may remain near the needle point. A pillow under the side helps to open narrow interspaces. The side should be carefully cleansed with alcohol and ether and painted with iodine. The skin is frozen with ethyl chloride, and, for the first operation when the larger needle is used, a small puncture is made with the knife so that no skin resistance may interfere with feeling resistance at the point of the needle. The needle of the syringe containing from one to two centimetres of the local anæsthetic is then introduced and the tissue infiltrated in front of the needle point. Just before reaching the parietal pleura about a minute should be allowed to pass before the pleura is penetrated. Half a centimetre more of the anæsthetic should then be injected. The needle is advanced slowly through the tissues and the several fascial layers are counted as they are penetrated by the needle. The resistance of the fibrous external intercostal is usually easily marked and the next following distinct, though slight, resistance is the parietal pleura. We prefer vertical to oblique direction for the puncture because the depth is more easily determined. Gentle suction is made with the syringe when the pleura has presumably been reached, and, if no blood or bubbles are withdrawn, the depth of the needle is noted and the needle removed. The needle guard is then adjusted to the special needle at this depth. We prefer not to use a guard at the first puncture. When difficulties are anticipated, Lillingston anæsthetizes two or three places at once as time is saved in case of failure and the puncture sites are drier.

Before using the special needle attention should be given to the following points; the needle must be dry and clear, the manometric oscillation sensitive and not interfered with by the filter, there must be no leak, the manometer levels should be at 0, the gas reservoir must be shut off, the valve between the gas and the water bottles must be open and the syphonage perfect, the bottles are to be so adjusted that the liquids of each are at the same level and the height of the liquid noted.

The needle with the stylet in position is now introduced. The fascial layers are more easily noted with the larger, blunter needle. When the external intercostal muscle has been passed, the stylet is withdrawn partly and the cock turned off before complete removal (Floyd's needle), or with Kuss's needle the sharp trocar is

replaced by the blunt stylet, the needle is then pushed on to the desired depth or until manometric changes are noted. If there is a free pleural space in which the needle eye rests, the levels of the fluid change at once and follow closely the respiratory movements.

These levels should be noted on inspiration and on expiration; but it is safer not to attempt to obtain the readings for deep respiration until after a gas bubble has been produced because of the danger of injury to the lung. It may be considered desirable also, to note the mean pressure by screwing down the valve (D) to the manometer until a minimal oscillation is registered. The mean pressure is not quite the same as the mid-point between the levels at the end of inspiration and expiration, but is rather nearer the expiratory pressure because the inspiratory phase is much shorter than the expiratory. This pressure is the favoured one for record by many continental workers.¹⁸

The measure of the intrathoracic pressure is the difference between the levels of fluid in the two limbs of the manometer, i.e., twice the amount registered on the centimetre scale of the manometer when one limb only is read. As a practical matter it is far more convenient to record this reading of one limb only, but it must be borne in mind that it represents only half the true pressure. There is opportunity for confusion on this point, obvious though it may be, and no paper we have read makes it clear. It is possible that sometimes this half reading has been mentioned in place of the true reading. The excellent article by Rist,⁶¹ for example, suggests just this error in the explanation of the relation of the pressure in the bottles to the manometric reading. An error in interpreting the pressures recorded might be disastrous if an operator were to follow the lead suggested in the use of high pressures by various authors. Pressures recorded in this article refer to true pressures only.

When the pleural space is free from adhesions and collapse of the lung will be easy, the right point for the eye of the needle is generally found without difficulty. The greatest caution should be taken not to wound the lung. This may easily happen because the impetus of the needle is not sufficiently checked as the blunt point perforates the resistant layers. Much force is sometimes required to penetrate the external intercostal with a blunt needle and the restraining fingers must be well on guard. This danger is least with Kuss's needle. A non-adherent lung will yield before its round point, and this is probably also the case with

the larger bluntly pointed needle of Floyd. Much manipulation of the needle in attempting to find a free space is to be avoided as the wounding of tissue would create conditions predisposing to gas embolism, and the irritation might induce shock. All drag on the needle should be avoided. If distress should be manifested, or unexpected or unusual pain complained of, at any time during the operation, the needle must be promptly withdrawn.

When the oscillations are quite characteristic of a free pleural space, about which more will be said later, the valve (C) to the gas bottle is opened. Ordinary respiration will quite quickly aspirate the gas. The manometer will now show diminished but perceptible oscillations and serve as a constant guide as to the position of the needle point. As the negative pressure in the pleural cavity decreases, and the negative pressure in the gas bottle increases, so that a state of equilibrium is approached, the water bottle is raised from time to time until the levels are equalized. This is Saugman's method, which we have largely followed.

Kuss⁵⁰ goes further, and, as a safety precaution in case the needle should have entered a vein, creates a negative pressure in the gas reservoir by setting the level of the liquid in the water bottle about 5 cm. below the level of the liquid in the gas bottle. This level would be modified somewhat according to the original manometer oscillations noted. Either of these methods is to be preferred to using pressure on the gas at a first operation. The aspiration method of allowing the collapse of the lung is designed to lessen the risk of gas embolism. For gas to be aspirated, however, the pressure in the gas reservoir can never be lower than the minimal intrapleural pressure. The manœuvres of Saugman and Kuss are best adapted for the class of cases in which good manometric readings are obtained and in which, therefore, there is least risk of producing gas embolism. In cases of difficulty, as will be noted later, after certain manœuvres have been undertaken, gas may have to be introduced under varying degrees of pressure. It is in these difficult cases that the danger of gas embolism, or possibly of pleural reflex, are greatest. It must be the rule that gas may never be allowed to pass the needle until satisfactory manometric readings have been obtained. When urgency and difficulty co-exist, any attempt to induce compression of the lung should only be undertaken with the patient's free consent and full realization of the dangers.

If 100 c.c. are rapidly aspirated and large oscillations about a mean negative pressure have occurred, a true intrapleural pneumo-

thorax has surely been formed (Holmgren⁶²). Several hundred centimetres may thus be readily introduced at atmospheric pressure, or less, when the space is relatively free. The gas valve is closed after each 100 c.c. has been aspirated and the readings of the manometer are noted. The readings for the extremes of respiration may now be taken and may give some information about existing conditions.

At the initial inflation it is well not to introduce more than 300 c.c. of gas. This amount aspirated never distresses the patient. The gradual adjustment of heart and lungs to the deranged intrathoracic conditions is desirable from every point of view and only urgency, as for hæmorrhages, when from 500 to 800 c.c. may be given and repeated on the next day or two, and economy of time and money warrant larger inflations. In private practice these considerations sometimes necessitate reasonable maximum amounts being given. The temptation for the operator is always to give more than an ideal amount rather than less. No doubt many patients may bear larger amounts well; but discretion can be exercised on this point. Some writers urge a large initial injection to ensure the easy finding of the space at the next operation, and to guard against possible injury to the lung, or other accident.

When the needle has been removed, a small, firm pad of gauze is strapped firmly over the puncture. A leak of gas into the subcutaneous tissues takes place more easily when the larger needle is used, than with the smaller needle used at refills; but with the small quantity introduced at the first operation unless high pressure has been necessary there is seldom trouble.

Two days later another inflation should be given, and at gradually lengthening intervals increasing amounts of gas are injected until the mean pressure is 0 or slightly positive. Several conditions influence the end point of pressure that is to be maintained. After the first injection slight pressure on the gas, of 5 to 10 cm. water, may be used, instead of continuing the method of aspiration. When inflation is well borne 1 c.c. of gas per second may be considered a fair rate of flow. Nitrogen is at first absorbed at the rate of approximately 75 c.c. daily from a normal pleura (Robinson and Floyd¹²), as time passes the amount absorbed is reduced to about 25 c.c. Fever and movement hasten while inflammation and thickening, or adhesions, retard absorption. Gas may rapidly be lost by diffusion through the wall of a large underlying cavity (Carlton and Evans⁶³). A consistently maintained, but gradually increasing, degree of collapse of the lung should be aimed at. As

this is impossible of realization in an absolute sense, the intervals are regulated by estimations as to the absorption of gas, by physical examinations, x-ray examinations, the feeling of the patient and change of symptoms. Several months may possibly pass before the interval exceeds three weeks, though in many cases this will become prolonged to six weeks.

Difficulties are, however, frequently met with, and they are at once indicated by the absence of fluctuations of the water levels of the manometer; or by fluctuations that are either not characteristic of the presence of the needle point between the layers of the pleura, or about which there is some ambiguous meaning.

There may be obstruction in the needle, needle cock or filter, from water because of imperfect drying of the apparatus; or in the needle from tissue, blood or serum; or at the opening in the needle from a valve-like block by lung during expiration. A respiration may clear the needle, and if this fails the stylet should be re-introduced to remove possible obstruction by tissue. Deep respiration to clear the needle should not be attempted, since, as suggested above, embolism may be induced thereby. Fluid may give a valve-like obstruction which causes a step-like increasing negative pressure during inspiration, with no alternating rise on expiration. A syringe may then be attached to the needle butt and aspiration made to determine if serous effusion is present. If this test is negative the needle may have to be removed and dried. When the lung blocks the needle, a feeling of elastic pressure may be communicated through the needle during expiration. Occasionally, when we have been reasonably sure that this valve-like action of the lung was the cause of the interference with proper readings and there has been a deep inspiratory fluctuation, we have allowed a few centimetres of gas to enter. Instantly proper fluctuations have taken place.

The needle point may be at the correct depth and lie in pleural adhesions or in a thickened layer of pleura when fluctuations will be absent; or, if it lies in a small fissure in the pleura there may be a great modification of them. It may not have reached the pleural space but may lie between the internal intercostal muscle and the parietal pleura and there may then be either an absence of fluctuations or modified fluctuations which are misleading; or it may be outside the intrathoracic fascia when there will be no fluctuations. It may also have penetrated the pulmonary tissue and be either in a blood vessel or in an air-containing space. The careful study of the manometer will usually enable one to determine the situation

of the needle point and when the readings are ambiguous some manœuvre will generally help to make their meaning clear.

(To be concluded.)

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UTERINE HÆMORRHAGE AT AND AFTER THE MENOPAUSE

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IN considering the question of uterine hæmorrhage at the time of the menopause and after, it is necessary that one should have an idea of the normal changes which accompany the menopause and the time at which these occur. As we all know, the menopause, or climacteric, is the term applied to the change which takes place in the organism of a woman, resulting in the cessation of menstruation and of sexual activity. It is easy to define but not easy to explain. As no satisfactory explanation has ever been given for the onset of menstruation and its regular periodic recurrence, neither has a satisfactory explanation been given for the cessation of the function. Various theories have been propounded and it is not within the scope of this short paper to review these; suffice it to say that the majority of the men who have made, or are making, a study of this question, are coming to believe that menstruation is under the control of the ovaries. In keeping with this theory, the most satisfactory explanation, to my mind, of the cessation of menstruation is given by J. G. Clark, of Philadelphia. In 1899 Clark published the results of extensive anatomical and physiological investigations of the vascular system of the ovary (*Johns Hopkins Bulletin*, Vol. 10).

He injected a very large series of ovaries from individuals ranging in age from a six months fœtus to a woman many years past the menopause, and it is upon this work that his final conclusions were based. He says,—“As there is no increase in the number of follicles after birth the obliteration of each primitive or partially developed one naturally decreases the total original number, which results in an increase in the medullary portion of the ovary at the expense of the follicle-bearing or cortical zone. The law of development in the follicle is from within outward, that is, the primitive follicles lying nearest the central circulatory tree are the first to undergo development. . . . Having reached a certain stage

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in their development, a retrogressive change following the degeneration of the ovum is inaugurated, and the original site, occupied by the follicle, is replaced by a very minute addition of connective tissue to the stroma of the organ, which naturally builds up through successive accumulations the central area. Follicles in various stages of development and retrogression are noted in all ages after birth, and according to my observations the same principle involved in the obliteration of the unruptured follicles before puberty governs the organization of the corpus luteum after ovulation is inaugurated. . . . What determines the cessation of these progressive changes and the beginning of the retrogressive or oblitative process remains unexplained. The fact remains, however, that with the degeneration of the ovum the liquor folliculi is absorbed and the cavity is filled in with large embryonic connective tissue cells arising from the theca interna.

"Through the gradual diminution of the blood supplied by the follicular wreath the excess of connective tissue undergoes hyaline changes and absorption until finally only a mere trace of the new-growth remains. In this way the size of the ovary is maintained within reasonable bounds. . . . In the progressive growth of the ovary the oblitative changes just referred to continue until the follicle-bearing area becomes a narrow zone compared with its width in the new-born child.

"As a conclusion to this study the cessation of ovulation is ascribed to the gradual impairment of the vascular systems, through first, densification of the ovarian stroma and second, through the retroactive effect of imperfectly removed corpora lutea, which as an end result diminishes the blood supply to the cortical area to such an extent that the growth of the primitive follicles is retarded and finally completely inhibited. These final retrogressive changes lead up to and constitute the menopause or climacterium."

In accordance with this theory we would expect the onset of the menopause to be gradual since the growth of the primitive follicles is gradually retarded and that menstruation would cease when the primitive follicles are completely inhibited. This is what ordinarily occurs, menstruation becoming either gradually less in amount or less frequent in recurrence until it finally ceases. Those rare cases where a woman menstruates regularly, both in time and amount, and then suddenly ceases, may still fit in with the theory, for here, although the change may have been going on gradually, sufficient ovarian tissue has been left to keep up a normal ovulation but this small remaining amount may come under

influence of the retrogressive changes all at once and be quickly obliterated. Now the point I wish to make is that the menopause is a subsidence of the loss of blood, and all cases which present, at this time an increased flow are pathological. Unfortunately among the laity and more unfortunately even among members of the medical profession, there is a belief that mild or even severe hæmorrhages are a necessary evil associated with the menopause and may be safely left to nature's care. Nothing more erroneous than this is possible or may be so far-reaching in its baneful results.

Moreover, one must recognize the wide range of ages at which the menopause may occur, in order not to fall into error. Most authorities agree that it occurs in the majority of cases between the ages of forty-five and fifty-five. As these are foreign statistics, in order to check up whether this is approximately correct for Canada, I have looked over my last 400 case records and find 50 of these women had passed the menopause. Of these 24 or 48 per cent. were between 46 and 50; 7 or 14 per cent. between 51 and 55; 9 or 18 per cent. between 41 and 45; 5 or 10 per cent. between 36 and 40; 3 or 6 per cent. between 31 and 35; 1 at 56 and 1 at 26. I have excluded all cases in which the menopause may have been delayed by any pathological condition such as fibromyoma or carcinoma. It will be seen that my figures show the menopause rather earlier than those given by most others. For the purposes under discussion it is sufficient to mention the two extremens, 26 and 56 years, to show that the menopause may occur within a range of thirty years; consequently in considering any case of hæmorrhage, age must not be taken too much into account. If a woman, say, at forty begins to show disturbance of menstruation, it ought not to be assumed that it is just the menopause and passed over on that score, for in the normal course of that woman's cycle the menopause might not occur for fifteen years or more.

During these thirty years a woman may be subjected to all the causes of hæmorrhages incident to sexual activity, for she may bear a child at any time till the complete cessation of the flow. In fact, a few rare cases are on record of women having borne a child after the flow has stopped. It is during these years that carcinoma usually makes its appearance and that fibromyomas attain their greatest activity. It is therefore incumbent upon the medical practitioner to attempt to find the physical or pathological cause of the increased flow even if it is not severe enough to be classed as a hæmorrhage. The first duty is to ascertain if a local cause is present. It is nothing short of criminal to allow a woman com-

plaining of irregular bleeding to go without examination simply on the supposition that she is suffering from the menopause. Any reluctance on the part of the patient must be overcome by judicious explanation and advice. No false modesty should permit the examination to be deferred. True, many of these women bleed so constantly that it is almost impossible to find opportunity for examination at a time when bleeding is absent, and most women object to being examined when they are bleeding. But the physician must not hesitate; by the use of rubber gloves and the proper arrangement of a protective sheet, it can be accomplished without shocking the sensibilities of the most sensitive patient. Besides, certain advantages are gained by making the examination at this time. The character of the blood may give some information. It may be discovered whether the blood is coming from the uterus or from a vulvar or vaginal lesion or whether it is coming from the cervix or from the body of the uterus. Should a polypus be protruding it may be seen and the whole trouble easily cleared up by its removal. If the cervix is involved with cancer a diagnosis may be made at once or if further evidence is required, a piece may be snipped off and a microscopical examination made. Should the blood be coming from the uterus itself, arrangements must be made at once to curette and have the scrapings examined. This is absolutely imperative and applies to bleeding before, at, and after the menopause; and I believe this should always be done under anæsthesia when a complete examination of the pelvis may be made, and pieces obtained from different parts of the uterine cavity, otherwise, if the part involved is small it may be missed entirely and a false security result. The importance of a very thorough examination cannot be emphasized too much, and when one considers that according to the best available statistics, one woman in every eleven after the age of thirty-five dies of cancer of the uterus, and that in 65 per cent. of all cases of hæmorrhage after the menopause, the cause is cancer, one need not apologize for reiteration. Within the last year four patients have come under my notice who had been suffering from irregular bleeding for periods varying from six to eighteen months, who had each been told by her physician that it was due to the menopause and in no case had an examination been made; in each case advanced carcinoma of the cervix was present. During the last five years I have seen ten or twelve similar cases but it was not always the fault of the physician that they were so far advanced. The women do not present themselves for examination early enough. They must be made to understand that irregular

or increased bleeding is always pathological; the education of the public in this regard is largely in the hands of the general practitioner. In passing it may not be amiss to point out that the first symptom of cancer may not be hæmorrhage but a thin watery discharge which becomes serosanguinous and later, when the disease is well advanced, becomes bloody and later still foul-smelling and offensive. In practically every case of cancer, the information can be elicited by a careful enquiry, that the bleeding was preceded for some months by a watery discharge. It is only by keeping these points well in mind that we can hope to make earlier diagnoses in such grave conditions and by getting these cases early increase our percentage of cures.

In regard to fibromyomata a great deal of work has been done by various observers to explain the bleeding in these conditions. Clark (*loc. cit.*) injected the arteries with ultramarine blue in 10 per cent. gelatine. Sampson, of Albany, has also investigated a large series of cases, injecting the arteries with Venetian red and the veins with ultramarine blue in 15 per cent. gelatine; for stereoscopic radiographs he used bismuth carbonate (Mallinckrodt's) in 15 per cent. gelatine solution (*Surgery, Gynæcology and Obstetrics*, March, 1912). The result of all the experiments have shown that in order to cause hæmorrhage, a myoma must impinge upon the endometrium or seriously disturb the circulation of the uterus, and these cases are not amenable to general treatment. If a woman is fortunate enough to pass through the menopause without serious hæmorrhage or pressure symptoms, the myoma atrophies with the rest of the uterus and gives no further trouble. This fortunate result is, however, rare. In the usual course the myoma increases in size during the fourth and fifth decades and if it does not manifest its presence by pressure symptoms, it will do so by the menstruation gradually increasing both in length of the periods and in amount. The normal cycle which the woman has established is disturbed. In such cases, in early menstrual life, the highest aim of conservative surgery is to remove the growth, and by a painstaking plastic operation retain the uterus so that it may carry out the function intended for it. In the early forties and later, however, when the active child-bearing period is past, as a general rule one is safer in practising total extirpation by the route which gives promise of the greatest safety to the patient.

It is about the time of the menopause that we meet the cases which are classified as general fibrosis of the uterus. In these one does not encounter the whorled fibromyomatous nodules of which

we have just spoken, but instead one finds that the uterus has undergone an increase in fibrous tissue throughout. Upon examination usually some enlargement may be detected and as a rule the uterus feels harder than normal, but it is not always easy to differentiate this condition from the hypertrophied uterus of a woman who has borne a number of children. These cases usually resist treatment and if the hæmorrhages are increasing in amount and interfering with general health, they call for hysterectomy. In this general class may be placed the cases showing arteriosclerosis of the vessels of the uterus. In some the uterus may be slightly enlarged, but often no enlargement occurs, or it may be even smaller than normal. The vessels of the uterus may show marked arterial degeneration where none may be demonstrated in other parts of the body. Palliative treatment may suffice here, but in many cases the menace to good health or even life will only be removed by the removal of the uterus.

Then we come to the cases where no lesion can be found to explain the bleeding. These are the cases which would be curetted once, twice, and perhaps a third time without any relief and which were formerly, and even yet are, so often classified under the misleading and overworked term of endometritis. In seeking to explain this condition a great deal of work has been done by various clinicians and laboratory workers. Schichele and Keller in 1912, (*Archiv. für Gynækologie*, xcv. No. 3) published the results of exhaustive research in four hundred and thirty cases and advocated dropping the term glandular endometritis. They say that there seems to be no etiologic relation between these glandular changes and hæmorrhages from the uterus; the changes were sometimes accompanied by hæmorrhage and again there was severe bleeding without these changes. The failure of curettement to cure in so many cases confirms the lack of connexion between the hyperplasia and hypertrophy of the glands and the hæmorrhage.

L. Adler writing from Schauta's clinic at Vienna (*Medizinische Klinik*, February 1st, 1914, x, 5.) states that his research has confirmed the assumption that endometritis has nothing to do with uterine hæmorrhage; the uterus proper is seldom responsible for the hæmorrhage; the ovaries, or reduced coagulating power of the blood, the effects of constipation and of emotional stress are more likely to be the factor or factors involved inducing increased uterine flow. He says the curette has lost its vogue since it has been shown that it had a curative effect on only 10 per cent. of five hundred cases of uterine hæmorrhages compiled by Busse.

H. B. Whitehouse (*Lancet*, April 4th, 1914) says, "if the examination of the curetted endometrium is taken in conjunction with the menstrual discharge and care is taken to co-relate the appearance of the endometrium with the period of the sexual cycle, much valuable information may be gained as to the cause of hæmorrhage. This is proved by the examination of repeated scrapings from the same uterus, and it accounts for the fact that in glandular hyperplasia of the endometrium, curettement is only of temporary benefit."

The correctness of these views are being recognized more and more by gynæcologists everywhere, and at the last meeting of the Pathological Section of the Academy Dr. B. P. Watson showed interesting lantern slides which confirm these researches. My own clinical experience and the study of the routine scrapings from the uterus done at St. Michael's and Grace Hospital laboratories leads me to endorse the conclusions.

Curettage is one of the most abused operations of surgery. The simplicity of its technique and the general belief in its freedom from danger, have led to its unnecessary use, often with disastrous results. We have known of women dying after a simple curettage and the morbidity resulting from it is not easy to estimate. Although as a rule it is not a grave operation it should not be undertaken without all due care; as a matter of fact, it is seldom called for unless in conjunction with other operative measures required. Pathological conditions of the endometrium which may be benefitted by curettage are rare; even the fungus or villous forms are rarely cured by it, and these cases generally come to hysterectomy. At or near the menopause the curette is of little service except for diagnostic purposes.

What are we to do then in these cases where no gross pathological lesions are to be discovered? Such are among the most puzzling and perplexing problems with which the general practitioner and gynæcologist have to deal. These cases occur both before and after the menopause. One safe rule to lay down is that no treatment should be instituted until malignant disease has been absolutely excluded, then palliative measures may be tried. If in spite of all treatment the hæmorrhages continue as they sometimes do and the patient is going down hill, hysterectomy should be performed. In this type of case which is usually uncomplicated and in which the uterus is small, a total extirpation may be done easily and with comparative safety; in fact, the danger from the operation is not so great as the danger of an intercurrent malady

attacking an exsanguinated patient. The choice of abdominal or vaginal route will depend upon the size of the vagina and the operator's familiarity with the different techniques. Before undertaking the operation it is assumed that all medicinal treatment has been exhausted.

The treatment of each particular case will depend on its careful investigation and it is here that often a general cause may be discovered that may account for the hæmorrhage. Among these may be mentioned heart disease, interfering with the vascular circulation, liver disease interfering with the portal circulation, disease of the kidneys, gout, obesity and various blood conditions. Here the treatment indicated is that required for the general condition. I would call attention to the importance of recognizing syphilis as a causative factor in some cases of hæmorrhage. It is one of the possibilities seldom thought of and the importance and necessity of using the Wassermann test is apparent. I have seen two such cases where no other evidence of the syphilitic nature of the trouble was present.

In some cases disturbances attributable to the ductless glands may be a cause of the hæmorrhage. E. Sehrt (*Münchener Medizinische Wochenschrift*, February 10th, 1914) says, "the connexion between the thyroid and the ovaries seems to be particularly close and the thyroid may be responsible for conditions in the ovaries which entail bleeding in the uterus. We understand this a little better since we have learned the characteristic behaviour of the blood when the thyroid is functioning to excess or not enough. With hyperfunction the blood is abnormally slow in coagulating. With deficient function it coagulates abnormally fast." Sehrt found in fifty-six cases of uterine hæmorrhage without discoverable local cause that thirty-eight had all the signs of pronounced hypofunctioning of the thyroid. On this basis he gave thyroid treatment with marked benefit; not only the hæmorrhages but the general health showed a change for the better. Personally I have not seen much benefit from thyroid, ovarian, corpus luteum or pituitary extracts, at or after the menopause.

The best general lines to follow in treatment are rest in bed, hot douches, or saline baths, regulation of the bowels, proper dieting or change of climate and outdoor life. Although ergot has lost its vogue for uterine hæmorrhage, I have found Pil. Ergotin of great value about the time of the menopause; it seems to correct vasomotor disturbances, and besides lessening slight hæmorrhage has a most beneficial effect upon the hot flushes, headaches, palpitation

of the heart and nervous and mental depression from which these women so often suffer. Roentgen rays have been advocated by some men; the effect, however, is said to be due to the influence upon the ovary rather than on the uterus directly. Radium has been tried and some success has been reported but it is condemned in other quarters. With these two latter methods I have had no experience. In view of the success which has been attained by blood transfusion in various hæmorrhages, it is possible that this treatment may be used in the future with advantage in severe cases. The recent simplification of technique makes this method more available.

SUMMARY. 1. The menopause is probably induced by retrogressive changes in the ovary.

2. The menopause is *subsidence* of the flow of blood,—an *increase* in the flow is always pathological.

3. The menopause may occur during a period of thirty years or more.

4. A local examination should always be made where hæmorrhage occurs near the menopause.

5. Professional and public education regarding the early symptoms of cancer of the uterus is necessary.

6. In severe cases of uterine hæmorrhage which have resisted all medicinal treatment and where the patient is becoming progressively worse hysterectomy is indicated.

7. There seems to be no connexion between hyperplasia and hypertrophy of the endometrium and hæmorrhage from the uterus.

8. At or near the menopause the curette is of little service except for diagnostic purposes.

9. No palliative measures should be tried till malignant disease is excluded.

10. General conditions may be the cause of hæmorrhage, and syphilis should not be overlooked.

11. Organotherapy is of little value in hæmorrhage at or after the menopause.

12. Blood transfusion is a possibility in treatment of severe cases.

SOME SEQUELÆ OF ANTITYPHOID INOCULATION

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SINCE the declaration of war an enormous number of men have been inoculated against typhoid fever, a number infinitely in excess of anything hitherto attempted. With modern methods of military sanitation it is to be hoped that no very extensive outbreak of enteric will occur, either in the troops at the front, or in those collected in training camps. Nevertheless, from bitter experience in the past we may be certain that considerable numbers will be exposed to the onslaught of the *Bacillus typhosus*, and undoubtedly results of great theoretical and practical interest regarding the immunizing power of antityphoid inoculation will be forthcoming in due course.

In the meantime we are confronted with a series of phenomena which merit, and which are receiving, a considerable amount of attention, i.e. the effects produced by prophylactic inoculation. This subject was discussed in a paper by Sir William Osler in the *British Medical Journal*, November 28th, 1914, in which he quoted a number of results which I sent him. In the present communication I propose to amplify these, and to consider some further cases which have come under my notice. In investigations of this nature it is essential to have large numbers of cases at one's disposal, and I have been fortunate in having the opportunity of observing the effects of prophylactic inoculation on the eighteen thousand men composing the North Midland Division of the Territorial Force.

Violence of the Reaction. There can be no question of the fact that the reaction to a prophylactic dose in the doses at present employed, is much more pronounced than to a staphylococcal or streptococcal vaccine. In many cases, doubtless, the reaction is a slight and insignificant affair, involving merely some transient discomfort. In a considerable number of instances, however, the symptoms are sufficiently severe to deserve more serious consideration. The vaccine used was that prepared by the Royal Army Medical College, Grosvenor Road, but in some of the later cases

that supplied by the Inoculation Department of St. Mary's Hospital was employed. In these cases the resulting reaction was much less marked. The reaction produced was local and general.

The *local reaction* consists of a varying degree of pain, redness, and swelling at the seat of injection. In the majority of cases the reaction is sufficiently marked to prevent the arm being used for at least twenty-four hours. In some cases it assumes the character of a true inflammation, which spreads downwards as far as the elbow, the whole upper arm showing a brawny induration, which may take more than a week to subside. In the case of one officer, in whom the reaction was of an unusually violent character, when the swelling subsided a thickened, cord-like structure could be felt along the line of the brachial artery, extending up into the axilla and downwards for about two inches below the lower border of the pectoralis major. This thickening gradually passed off, but remained perceptible for three or four weeks. Thrombosis had evidently taken place in one of the veins accompanying the brachial artery. In no case did abscess formation follow inoculation.

The *general reaction* manifests itself by constitutional symptoms, such as general malaise, headache, pains in the back, disinclination for exertion, and perhaps a slight elevation of temperature. These symptoms are well summed up by Osler in the term "inoculation fever." The general reaction varies in intensity even more than the local, and with our present ignorance of the fundamental conditions on which the various reactions comprised under the term immunity depend, it is in most cases impossible to explain why one man should escape with a mere trace of indisposition, whilst another should be prostrated with the severest constitutional symptoms. Probably much depends on the powers of the tissues—using the term in the widest sense—to produce disintegration of the bacilli, with accompanying liberation of endotoxins, tissues which are hypersensitive or "allergic" producing a much greater disintegration, with accompanying toxæmic symptoms.

There are certain factors which may have some influence upon the intensity of the reaction.

Exercise appears to aggravate the symptoms. It was found that when the men of a battalion had to walk two miles after inoculation they showed somewhat marked constitutional symptoms. Part of the battalion was inoculated at their own headquarters, and the reaction in the men was distinctly milder in type. Officers who insisted on doing a full day's work on the following day suffered

more severely than those less heroic souls who forsook the parade ground for the shelter of their billets. Whenever possible it should be made the rule that no work be done on the day of inoculation, or on the day following.

Alcohol. It is generally assumed that the consumption of alcohol exerts an injurious influence on the local reaction, considerably intensifying it, and it has been customary to advise the men to abstain from alcohol for forty-eight hours. In the cases coming under our observation we have found little evidence in support of this view. In the great majority of cases alcohol certainly did not intensify the symptoms. Four men, whose cases I examined personally, drank large quantities of beer immediately after inoculation; all four escaped with the slightest possible local and general reactions, whereas many of the other men inoculated at the same time presented quite marked symptoms. One officer, of markedly temperate habits, consumed a large quantity of alcohol for experimental purposes shortly after his second inoculation. The first dose produced the usual local and general reaction, but the second produced no reaction of any kind whatever. Lest it should be urged that the immunizing power of the vaccine was in some way interfered with by the alcohol, it may be stated that the blood of this case showed a well-marked Widal reaction a fortnight after the second inoculation. Thus alcohol consumed soon after inoculation appears to produce no injurious effect; indeed it seems, if anything, to lessen the reaction. Colonel Beevor, assistant director of medical services, North Midland Division, tells me that his own experience in India was very similar, so much so indeed that he used to advise his men to have a good glass of beer immediately after inoculation.

When, however, an interval of a couple of days has been allowed to elapse between inoculation and drinking, the case is different. A couple of officers did not touch alcohol until forty-eight hours after inoculation; each then had a glass of lager beer. The effect was astonishing. In about three minutes the arm began to ache, and on examination was found to be inflamed, swollen, hot, and very tender, although prior to inoculation almost all the signs of local reaction had disappeared. The condition of inflammation lasted for two or three hours. The suddenness of the change was the most striking feature, and the causal connexion was absolutely undoubted. I have seen several other cases of a similar nature, in some of which the alcohol was in the form of whisky and claret.

Previous attack. On *a priori* grounds one would expect the

reaction to be slighter in those cases who had had a previous attack of typhoid. Only two such cases came under my notice, but in both the reaction was extremely marked. It may be that some degree of hypersensitiveness existed. Age did not affect the reaction to any appreciable extent.

Pathological phenomena developing after inoculation. Hitherto only normal reactions have been considered, or reactions differing from the normal merely in their varying degrees of intensity. In some cases, however, there supervened definite pathological phenomena of considerable importance.

Intestinal symptoms. In quite a number of cases definite evidence was observed of a considerable increase of intestinal activity. This may be due to an inflammatory condition of the intestinal mucosa set up by the inoculation, or it is possible that the activity of certain members of the intestinal flora may be increased. In many cases diarrhoea and intestinal pain were complained of, and in such a case as the following it was evident that an abnormal amount of fermentation was set up. An officer (R.A.M.C.), who had never previously suffered from enteric, was inoculated for the first time. The same night he began to experience considerable abdominal discomfort, amounting at times to definite pain; this feeling was localized, and coincided in distribution almost exactly with the position of the cæcum and the terminal portion of the ileum. During the night he had to go to stool several times, and this looseness of the bowels continued throughout the succeeding day. The motions were semi-fluid, greenish in colour, contained a large amount of mucus and possessed an extraordinarily offensive odour. Evidently some well-marked change had been induced in the intestinal contents by the inoculation. A very similar train of symptoms followed the second injection. The pain was again confined to the region of the cæcum, large quantities of mucus were passed, and the motions were once more extremely offensive.

Such a sequence of events following on both occasions may safely be removed from the realm of coincidence. The endotoxins liberated from the bodies of the typhoid bacilli by the cytolytic action of the tissues seem to have exerted some influence on the mucous membrane of that part of the alimentary canal which is specially affected in typhoid fever, and may possibly have aroused some members of the coli-typhoid group to increased activity. The importance of this case is that it provides a connecting link with the two cases of appendicitis about to be described.

Appendicitis. The first case was that of a young man who had had two previous attacks of pain in the region of the appendix, the last attack being eight months previously. He was inoculated for the first time on September 18th, and at mid-day on the 19th he developed pain in the abdomen, settling into the appendix region. On September 21st, he was admitted into hospital, operated on at once, and a perforated appendix bathed in pus was discovered.

The second case also developed appendicular pain within twenty-four hours of inoculation, was operated on as soon as the diagnosis was definitely established, and an acutely inflamed appendix with periappendicular abscess was again found. Both cases made a good recovery.

The first case might have been regarded as a coincidence. The occurrence of the two cases, although extremely suggestive, might have received a similar explanation, owing to the lack of any apparent direct connexion between inoculation and appendicitis. The above-mentioned case of intestinal catarrh, however, forms an important connecting link with these cases of appendicitis. If intestinal catarrh and fermentation can be set up by typhoid inoculation, there is no reason why in the appendix itself there should not be catarrh of the highly lymphoid mucous membrane, together with heightened activity of the bacterial flora within its lumen, a combination well calculated to precipitate an attack of acute inflammation, especially in an appendix already not sound.

Typhoid. There seems little doubt that in the following case inoculation bore a close causal relationship to an attack of typhoid fever.

The patient, a young man, complained on October 2nd of feeling seedy, but was able to remain on duty. During the next fortnight he felt by no means well. He was inoculated on October 16th. He had a somewhat violent reaction, and became rapidly worse. On October 19th and 20th he had diarrhoea, for which he saw the regimental medical officer. On the 23rd he had a temperature of 101.5° , rose spots, slight abdominal tenderness, and a large spleen; the diarrhoea was replaced by constipation. The case developed into a typical one of typhoid fever, and was removed to a general hospital.

From the sequence of events it is almost certain that at the time of inoculation the patient already had typhoid bacilli in his bowel or gall-bladder, that the large prophylactic dose—so much larger than a therapeutic dose, and intended for a healthy individual

—lowered the opsonic index to the typhoid bacillus, and that an attack of the disease was thus precipitated. A somewhat similar case is reported in the *British Medical Journal*, December 26th, 1914. One can well imagine what capital the "antis" would make out of such a case as this, and with what ingenious misrepresentations they would report it.

Jaundice. In four cases jaundice developed a few days after inoculation. There can be little doubt that the jaundice was catarrhal in type, and caused by obstruction to the outflow of bile from swelling of the intestinal mucous membrane, the effect of inoculation. In every case the patient became noticeably lethargic. The usual signs of jaundice, such as slow pulse and clay-coloured stools, were also present. Recovery in each case was rapid and complete.

Pneumonia. In two cases inoculation was closely followed by an attack of pneumonia.

CASE 1. A healthy young man was inoculated for the first time at 9 a.m. At mid-day he had a rigor, and by the evening felt very ill, and complained of pain in the right side. Two days later he was admitted to hospital, and was found to be suffering from a typical lobar pneumonia, involving the whole of the right lower lobe. The sputum contained numbers of pneumococci. On the seventh day of the illness the temperature fell by crisis and the patient made a good recovery.

CASE 2 was similar in character, except that the onset was not quite so rapid. The patient was inoculated for the second time, felt very seedy next day, and three days later had a typical lobar pneumonia. Again the sputum contained numerous pneumococci.

These cases of pneumococcal infection were evidently precipitated by the inoculation, but without doubt the causal organisms were lurking in readiness to make an attack. Had the patients not been inoculated, some such depressing influence as a chill would have got the blame, instead of the vaccine.

Skin rashes. Three cases of severe urticaria came under my notice. In one of these the colour was of a remarkably vivid hue; it was as if the patient had been steeped in some aniline dye, such as eosine. In no case did the condition last for more than forty-eight hours. None of the cases showed any rise of temperature.

In some cases the inoculation appears to have picked out a previous weak spot. Thus a sergeant, who had rheumatism in his right knee in August, when inoculated at the end of October de-

veloped severe pain in that knee. In the case of an officer conjunctivitis occurred on both occasions in one eye which had previously been the seat of some conjunctival trouble. Another man, who had sprained his foot some time previously, had considerable pain in it after inoculation.

Conclusions

In the great majority of cases inoculation is a harmless procedure, involving at the most a certain degree of temporary discomfort, and those constitutional symptoms comprised under the term "inoculation fever."

In a few cases the sequelæ are of a more serious character, and in some instances inoculation may be followed by such conditions as pneumonia, appendicitis, and severe gastro-intestinal catarrh.

In so large a series of cases it was only to be expected that some unforeseen phenomena should develop. If eighteen thousand men are taken out for a march, and one of them develops pneumonia, even should the patient unfortunately die, it does not incontestably prove that marching is an occupation most dangerous and injurious to the private soldier, and one which should on no account be indulged in. Rather does it prove that if sufficiently large numbers of men be considered, in a small percentage such organisms as the pneumococcus will be found lurking, and any depressing influence, such as a slight chill or inoculation, may precipitate an attack of a disease which was in any case imminent. It is the duty of the scientific worker, "the picker up of learning's crumbs," to record all the results which he obtains, whether they be favourable to his initial thesis or not, yet he cannot but lodge a protest when he finds certain of his statements, divorced from their context, paraded before the would-be recruit as an awful and solemn warning against the loathsome and pernicious practice of inoculation, by a small party of men and women whose fanaticism is untinctured with commonsense, and who, for reasons incomprehensible to the ordinary mind, appear bitterly to resent the idea that our soldiers should be as efficiently as possible protected against infectious disease.

JUVENILE DELINQUENCY*

BY GORDON S. MUNDIE, B.A., M.D.

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THE aim of a court of justice should be to place the responsibility of any crime committed on the right person, and then to decide how far this responsibility should be borne by the person accused. This, however, is not our modern way of dealing with crime, in fact our method of dealing with criminalism is a hit-or-miss one. According to law every man is innocent until proved guilty (although even this statement is very much twisted in our courts of law), but the fact I wish to bring forward, is that every wrong-doer should be held irresponsible for any crime until proved responsible. In order to show that we do not achieve the object aimed at, i.e., that when a person is committed to jail or penitentiary he is returned to society, after a certain time, a better individual, mentally and physically, and of less danger to the community, we have only to read the reports issued in England. In 1910 out of one hundred and sixty-eight thousand offenders, one hundred and four thousand had been convicted previously; sixty-five thousand of these had been convicted more than twice before and twelve thousand upwards of twenty times. Why this failure of adjustment? Was the prescribed treatment unsuited, or is it impossible to reform some offenders, or was the environment after release the cause? These are the questions which we should try to unravel.

Unfortunately in this country there are no figures such as the above; in fact, no attempt is made to establish the connexion between the crime committed by the accused person and his mental make-up. Crime, like all conduct, is an attribute of mental life and this being so, in order to get at the cause of crime we must study the mental life of the criminal. Very little has been done in developing this science, but what has been done has clearly shown that most criminals are physically and mentally inferior. Lombroso and his school have attempted to prove that there is a definite

* A preliminary report on the examination of the boys sent from the Juvenile Court, Montreal, to the Shawbridge Training School.

criminal type which is inherited generation after generation, but the work of modern criminologists and psychologists has shown the error of this theory. The studies of criminalism of the present day aim at the development of a science of adjustment of human relationships. The solution of the problem involves adjustment between social possibilities and individual tendencies. For rectification of anti-social conduct there must be self-developed or environmental control—in either case an adjustment. Our courts of law do not take any cognizance of any intrinsic conditions of the mind and body which might predispose towards delinquency. As shown by the English statistics, the offender is often returned to society no better equipped to avoid misconduct. The object of every court of law should be to develop a science showing how best to deal with the criminal. This would mean the appointment of an expert psychologist and physician, or a physician with a psychological training, who would examine any accused person referred to him and gather statistics on this subject. The causes of misconduct may be found in outer influences, past or present, in physical make-up, in mental defects or aberrations; or in mental habits, imageries, conflicts and repressions. In the last few years tests designed to determine the mentality of a person, especially of children, have been greatly improved, and it is along these lines that the greatest advancement has been made. The Binet-Simon tests, with their modifications, and the form boards and other tests, as used by Healy and at Ellis Island, have been of great help in the Juvenile Courts, and in weeding out the mentally defective immigrant.

In order to determine, if possible, what percentage of the children sentenced by the Juvenile Court, Montreal, were mentally defective, I obtained permission to examine the boys sent to the Boys' Farm and Training School, Shawbridge. There is no doctor attached to the Juvenile Court, Montreal, and no examination is made of the children's mentality, but they are simply sentenced for a term of years at Shawbridge by the judge. The boys were examined with the Binet-Simon tests and one of Healy's form boards along with a thorough physical examination, including where possible an examination of the nose, throat and ear, and a note by the superintendent on the boy's character and family history. I am indebted to Dr. Dorval, of Montreal, for the examinations of the nose, throat, and ear.

At Shawbridge all the eighty-one boys were examined; in addition to these, I have examined, in an unofficial capacity, five

boys and one girl from the Juvenile Court, making in all eighty-seven children, ranging in age from nine to nineteen years. The results of the examination were quite in accord with the findings of Goddard and others in the United States. Forty-two out of the eighty-seven children were three years or more retarded, or in other words were mentally defective, a percentage of 48.27; twenty were normal; twenty-two were from one to three years retarded, and in three cases the examination was unsatisfactory owing to nervousness of the child. Every child was examined individually and in quiet surroundings. It is important, of course, in using these tests to make the child perfectly at ease and to have no preconceived ideas of his mentality. Physically the boys when they arrived at the Home were, as a rule, in poor condition, but as most of them had been there for some months they were in very fair condition when examined. According to Dr. Dorval a large proportion of them were suffering from enlarged and diseased tonsils and adenoids, rhinitis, pharyngitis and ear disease. A large number also had bad teeth. The history, especially the family history, of each child could not be obtained fully, and all I could rely on in this regard was what the superintendent could tell me. This is most to be regretted, and it should be arranged that a copy of the probation officer's report be sent with every boy sentenced to the Training School.

An important point in the examination of these eighty-seven children is that not one of them was an epileptic; Healy, out of a thousand children at the Juvenile Court, Chicago, found that 7 per cent. were epileptic, so that it is remarkable that not one of my cases had epilepsy. Several of them had a history of convulsions in early infancy, but none of them at present suffer from them. Of the fifty-eight boys who had reached the age of puberty, in only five was there a history of masturbation or sexual perversion, a percentage of 8.62. Twenty-seven boys were of the Jewish nationality and fourteen of them were mentally defective. The Jewish boys were mainly sons of immigrants and their delinquency can possibly be traced to the fact that they learn the English language more quickly than their parents, which leads to lack of parental control; and along with poor environment and lack of playgrounds, they soon drift into bad company which eventually leads to delinquency. This problem of the children of immigrants is a most interesting and important one which must soon be seriously considered by the State.

The following notes on some of the boys will perhaps give a better idea of their examination than I could explain.

No. 50. Canadian born boy sentenced for five years for theft. His father is dead and his mother has tuberculosis. He is very deaf from chronic middle ear disease, has enlarged tonsils and adenoids and a naso-pharyngeal catarrh. His age is fifteen and his mental age nine. He is a harmless lad with an amiable disposition but with no judgement or will power, and therefore should be kept in an institution all his life.

No. 100. This boy was sentenced for four years for theft of tobacco. His father, a French-Canadian, is alive; his mother, a coloured woman, is also alive but a drunkard. His home is a wretched one and all the rest of the family are criminals. This is his second or third time in a reformatory. He is doing well but is a sexual pervert. His mental age is apparently normal, although the examination was not altogether satisfactory. He has diseased tonsils and hypertrophy of the middle turbinate bone.

No. 114. A Jewish boy born in Bucharest. His father is a cataleptic, lazy, and likes to exhibit his catalepsy; his mother is a highly strung, nervous woman; one of his brothers is in the penitentiary; another brother is with him at Shawbridge, and is two and a half years mentally retarded; a sister, aged sixteen, ran away from home and was found in Toronto masquerading in boy's clothes. When this boy came to Shawbridge he was suffering from syphilis, heart disease, hæmorrhoids and varicose veins. After six weeks in bed he began to improve and has continued to do so. His age is seventeen and his mental age is fourteen. He should always be under supervision.

No. 126. A Jew, sentenced for three years for shop-breaking and stealing. His father and mother are dead. His age is sixteen and his mental age ten and a half. He has no judgement nor will power whatever and is a masturbator. He should be in an institution all his life.

No. 130. A son of Irish parents. He came to Shawbridge with one of the worst characters that could be imagined, and all the court officials predicted that nothing could be done with him. He has given no trouble whatever, and is one of the best boys. He was suffering from chronic constipation, diseased tonsils, and chronic rhinitis. With the improvement in his physical make-up his mentality has also improved. His mother is a small, nervous woman, while his father is a big Irishman. His age is sixteen, while he is mentally nine and half years old, but I believe that as he improves physically he will grow mentally and should eventually make good. A brother of his, whom I examined, was six and half years retarded

mentally but he also was badly nourished and was suffering from chorea.

No. 137. A boy born in Canada of English parents. His father and mother are both dead but he has a step-mother. He is what the superintendent calls "a neglected boy." He is nineteen years old but mentally only eleven and a half years. He is one of these simple, confiding types of children, of the moron class. He needs institutional surroundings all his life. He makes a good farm worker.

No. 141. An English boy, sentenced for three years for vagrancy. Father and mother are both dead. Has good brothers and sisters. His age is sixteen, but mentally only eight years; he is a medium grade imbecile. When asked to do the "Mare and Foal" picture puzzle test he placed the blocks over the holes—not getting one in properly—and was quite satisfied that he had done it correctly. He is very affectionate but a masturbator. He should be in an institution all his life.

No. 169. A son of immigrant Jews. This boy is about four feet six inches tall, a bright, cheerful chap, a born leader. He was one of the best boy burglars in Montreal. His age is nine and mentally seven years. He soon got out of parental control and roaming the streets got into trouble. This boy, on account of his cleverness, will one day, I am afraid, have to be sent to the penitentiary.

No. 172. This is the only girl from the Juvenile Court that I have examined. She is a nice English girl, age eleven and a half years with a mental age of eight and a half years. She is a kleptomaniac, walks the streets and sleeps under stairs, away from home at night. She had very diseased tonsils and adenoids. She is the only child and her parents, especially the mother, who is a very nervous woman, have no idea how to manage her. Under proper care, she should grow up a fine woman, but with her present environment, I am afraid, will develop into a professional street walker.

Every individual in his development from infancy to maturity repeats the history of his race. This is a history of steady and progressive climbing upward from the condition of primeval man up through savagery, next merging into barbarism, then into chivalry and finally into modernism. Each child lives through these stages of racial development and the different exploits he enters into are simply manifestations of this development. If we realize this it will help us to find the solution for many cases of delinquency which may puzzle us.

From a physical standpoint, loss or lack of nerve control is an important cause of delinquency. This loss or lack of nerve control may be caused by nerve initiation, gross failure of development of the nervous system, or lack of development of the higher centres. Every physical defect is a source of nerve initiation but the most common ones are phimosis, diseased adenoids and tonsils, malnutrition, eye strain, and diseased or impacted teeth.

The problem of the mentally defective in Canada and their relation with delinquency must soon be studied and a solution found, because to-day the feeble-minded children who are living in this country are costing the government thousands of dollars. It must not be forgotten that every imbecile, especially the high grade imbecile, is a potential criminal. The problem should be attacked in several ways. First, the government should see that every immigrant, man, woman and child, is given a thorough mental examination, as is done at Ellis Island, and every feeble-minded person sent back to the country from which he came. Secondly, our public schools should be used as clearing houses for the mentally defective. In order to do this there must be compulsory education from the Atlantic to the Pacific, and efficient medical inspection of the school children. I cannot speak for other cities, but I do know that the medical inspection of school children in Montreal is not efficient. The object of the medical school inspector in Montreal is simply to diagnose diseases of a contagious nature, which can usually be done as well by the principal of the school. No thorough examination is made of the nose, throat, ears, eyes, heart, or lungs. No attempt is made to find out why a certain child is backward in his studies. As to mental tests, I am afraid, the ordinary medical school inspector has not yet learned their importance. This would seem to involve considerable labour, but after all the children had been once examined it would be an easy matter to examine every new pupil. Until this is done and proper institutions are provided for the care of the feeble-minded, the State will continue to erect huge penitentiaries and maintain them at an enormous cost.

Case Reports

FÆTUS IN FÆTU

AN Assyrian living at St. Mary's, N.B., called me to see his daughter Rosie, whose age was eight years and who was very small of stature. The father's complaint when asking professional attention for his child was that "Rosie had a big belly." The child was apparently in good health with a normal temperature and but little discomfort from the distended abdomen, which made her appear as a miniature pregnant woman.

During the years previous I had seen the child with minor troubles but had never been suspicious of any abnormal condition in the abdomen, but now I found a greatly distended abdomen with a hard mass lying more to the left than in the median line, apparently floating in fluid.

At the Victoria Hospital, Fredericton, on December 9th, 1912, while Dr. McGrath gave the anæsthetic, I made an incision through the skin and adipose tissue to the left of the median line and horizontal to it, extending about two inches towards the crest of the ilium. After exposing the sheath of the external oblique muscle and cutting, the muscles were pulled apart and the peritoneum opened, exposing a cystic mass. The skin, adipose tissue, and muscular sheath were again incised for a distance of two inches in a perpendicular line running from the centre of the first incision downwards, so that the muscles could be still farther separated for a distance of two inches or more; after incising the sheath the peritoneum was cut in the same line, thus giving a good opening into the abdomen. The cyst was tapped, allowing the escape of a quantity of clear fluid which looked like ascitic fluid. The mass in its sac was drawn out and found to be attached to the left broad ligament which was tied off disengaging the whole mass within its sac. The surgical wound was then repaired, stitching with iodized catgut the peritoneum and sheath of muscles; the skin and adipose tissue were brought together with silk-worm gut; no drainage was used.

The specimen was sent to the laboratory before I had finished the operation, where Dr. Holden, the pathologist, discovered

it to be Rosie's twin, which had been engrafted during embryological development within her abdominal cavity before its closure. The mass without fluid and sac was as large as two good-sized fists placed side by side. The body of the foetus was perfectly shaped. The genitals, those of a female, were as perfect as in a newborn child. The legs and arms were perfectly formed, but made one think of an x-ray plate, being perfect in shape but wanting in substance. The skull-cap with hair was in perfect form; there was brain tissue under it. The face was not formed perfectly.

The little patient made an uneventful recovery and in two weeks was out of the hospital; her health has since that time continued good.

How delightful it is to go back to our embryological teaching and realize that the individual begins from one cell—the female ovum which when impregnated absorbs the male sperm. This cell then segmenting into other cells which assemble themselves into three rows of cells, each row designated by the great law of nature to form a part of the body; one row the structural part, bones, muscles, etc., another row the internal organs, the third row the nervous system and special senses. Then, as development *in utero* progresses, these layers bend upon themselves to form the body cavity. The rest is easily explained; another ovum was impregnated when Rosie was conceived, and became enclosed in her abdominal cavity where it grew as her tissues grew, growing in the same way that a skin graft would grow.

Fredericton, N.B.

HARRY H. McNALLY, M.D., C.M.

DURING the month of March 522 cases of measles were reported in Winnipeg, eight of which were fatal. The other cases of contagious diseases reported were, typhoid fever, 2; smallpox, 7; chicken-pox, 36; scarlet fever, 20; whooping cough, 9; mumps, 4; diphtheria, 36; erysipelas, 3; tuberculosis, 28; the deaths recorded were whooping cough, 1; diphtheria, 5; erysipelas, 2; tuberculosis, 17.

Editorial

THE POSTPONEMENT OF THE MEETING

THE forty-eighth annual meeting of the Association which was to have taken place in Vancouver, July 6, 7, 8, and 9, has been officially postponed. As announced in these columns last month, the Committee of Arrangements in Vancouver reluctantly advised the Executive to take this action, as they had then become convinced that the prospects did not justify the holding of a meeting this summer. This conclusion was not, however, arrived at without every effort having been made to arrange a successful meeting, or without careful and deliberate consideration. Nearly every medical man in Canada had been invited to be present and contribute a paper. Most discouraging were the replies, particularly from Eastern Canada. Practically no one, except a few giving papers, consented to attend, and many who, earlier in the year, had signified their willingness to contribute, had since sent regrets. The daily cancellation of promises was particularly discouraging. Within four months of the announced date of the meeting the prospective papers amounted to less than a third of the number necessary for a satisfactory programme, and more than half of these were from the United States. Some prominent Americans and one Australian, Dr. Rennie, had consented to give Addresses, but the Committee felt it would not be in the best interests of the Association to bring these guests to a meeting the attendance at which would not be representative of Canada, but would consist almost entirely of local men. Furthermore, many of the most prominent supporters of the Association throughout the country had written either suggesting or urging postponement, and the decision of the British

Medical Association not to hold its regular meeting this year also had some influence and furnished a sort of precedent. Nevertheless, in spite of the cheerless prospects, the Vancouver committee offered to proceed with the preparations, if in the opinion of the Executive the meeting ought to take place this summer.

The following is the resolution of the Committee of Arrangements: "That in the opinion of this Committee a meeting of the Canadian Medical Association in July 1915 would not be a success; that such a meeting should be postponed until the termination of the War; that at a subsequent suitable time the meeting be held in Vancouver with the present local executive organization in force; and that the Local Secretary be instructed to communicate the same to the General Executive." This resolution was laid before the members of the Finance Committee, which is a body composed of seven men, elected from and by the members of the Executive Council, and charged with the carrying on of the business of the Association in the intervals between successive meetings; and at a meeting held in Montreal on April 6th, it was decided by six votes to one, that the Vancouver Committee should be officially authorized to postpone the meeting for the period of this year, and that this decision be laid by correspondence before the Executive Council for confirmation. This was accordingly done. At the present writing, of the thirty-four members of the Council, twenty-four have signified their approval of the postponement, and only one has disapproved. Three have protested against the assumption on the part of the Finance Committee that it had power to act officially for the Council in so important and unprecedented a question. The difficulties, however, in the way of getting together a representative quorum of the Executive Council at the present time are unsurmountable. The question was one to be decided with as little delay as possible, and the Finance Committee was convinced, from previous correspondence and discussion, that the Asso-

ciation as a whole would be prepared for this advice on the part of the Committee of Arrangements, and would agree that under existing circumstances, the attempt to hold the annual meeting should be abandoned.

As to the third clause of the Vancouver resolution, the Finance Committee was of the opinion that the question of the time and place of holding the postponed meeting was one to be arranged later by correspondence with the Executive Council, so soon as the unsettled conditions in this country improved to such an extent as to make possible the holding of a successful representative meeting. Such an occasion might possibly arise before the official termination of the War. It was, however, recommended that such meeting be held in Vancouver with the present Committee of Arrangements in office, unless the interests of the Association, at the time, should imperatively demand that the meeting take place in some city more centrally situated.

It is indeed unfortunate that after forty-seven years of successful gatherings there should be this break in the continuity. All must sympathize with our Vancouver hosts in the frustration of their plans. This summer had long been looked forward to as the ideal opportunity for a meeting on the Pacific Coast; instead, it finds many of us in Europe on the grimmest of business, and the rest too poor or too busy to leave home.

THE ASSOCIATION'S AFFAIRS

WITH our highest social and political interests in the balance, each one of us has one supreme duty, to take his part directly or indirectly in the War, and do what in him lies towards the consummation of an honourable and lasting peace. But this preoccupation should not make us indifferent to the interests which were of importance a year ago. All social organizations have felt the unsettling effects of the great struggle, and the Canadian Medical Association is no exception. For the first forty-three years of its exist-

ence the Association was little more than an annual gathering of a hundred or more medical men, at which those who attended paid a small fee. With its surplus funds it issued occasional volumes of Transactions. It was not, however, without influence both within and outside the profession, and it succeeded in bringing about some important medico-political reforms. In 1910 the Association was re-organized, membership was put on a permanent basis, and the foundations laid for a thorough and effective organization, capable of embracing all the provincial and local societies, and through them the entire profession of the country, in one corporate whole. After the establishment of the JOURNAL good progress was made. The provincial associations were affiliated, and by the end of 1913 the membership had passed the fifteen hundred mark. Financially, however, the income of the Association even in that year did not quite balance the expenditure, and the disastrous year of 1914 ended with a serious addition to the deficit, the total revenue being little over seven thousand dollars, nearly eight hundred less than the year before. The unlooked for falling off in membership, to which this was due, is to be attributed to the war conditions and, in a lesser degree, to the financial stringency preceding the outbreak, and to the relatively smaller attendance at the annual meeting.

Furthermore, the difficulties of the Association are administrative as well as financial. Since the autumn the Editor's time has been completely occupied with military duties. The absence of the usual contributions of his masterly pen has been noted by many. At present Captain Macphail is on his way to the front with No. 6 Field Ambulance. Our best wishes go with him and we trust that it may not be long before the JOURNAL will again enjoy the advantages of his guiding hand. Furthermore, the Assistant Editor and Secretary-Treasurer has also joined the colours and is on the staff of No. 3 General Hospital (McGill), which is now ready to be sent off. Excellent provision has, however,

been made by the Finance Committee to ensure that the work of the Association shall be carried on efficiently during the absence of these officers. The editing of the JOURNAL will be in the hands of an editorial board and will be supervised by Dr. G. G. Campbell, who was formerly editor of the *Montreal Medical Journal*, and we were fortunate enough to obtain the services of Dr. J. W. Scane, the Medical Registrar of McGill, who has kindly consented to act as Honorary Secretary-Treasurer. Two Montreal members of the Finance Committee, Colonel Birkett and Captain Turner, are also leaving, and a Sub-committee, as provided for in the By-laws, has been appointed.

The financial difficulty has been more or less satisfactorily met by providing that the work of all officers of the Association shall be done this year gratuitously. By this means, and by transferring all editorial business to the Secretary-Treasurer's office, economies have been effected which should result in a saving of some twelve hundred dollars. It was hoped that thus the deficit carried over from last year would be provided for. The postponement of the annual meeting, however, has now further embarrassed the finances, as the Association will be deprived of the usual revenue from that source. Also it will certainly be even harder this year than last to collect outstanding dues. The Finance Committee may, therefore, be reluctantly compelled to appeal to the friends who have the interests of the Association at heart, for funds to tide it over the critical period of the War. Another, no less serious, effect of the cancellation of the meeting will be to deprive the JOURNAL of its main source of original articles. We must therefore crave our readers' indulgence if scarcity of material should possibly result in any lowering of the high standard hitherto maintained.

To overcome these various difficulties the Association imperatively needs the loyal support of all its members. They can help in various ways: First by paying their dues. In this connexion, those who are leaving the country on

military service and who cannot conveniently pay their subscription, would confer a favour by notifying the Secretary if they desire temporarily to leave their membership in abeyance, so that the Association may be spared the expense of continuing to send the JOURNAL to their home addresses. Secondly, members may help by interesting others in the Association and its aims, and thus obtain new members. Further, the JOURNAL will be much benefitted, and the anxieties of the editorial board lightened, by the contribution not only of original papers, but also of editorial material, reviews of books, items of medical interest from all parts of the country, and extracts from letters of medical friends serving in the War. In short, with the support which its officers feel it has every right to expect, the Association and its JOURNAL, with which its hopes of future growth are linked, will emerge from this world-wide crisis, if not unscathed, at least unmaimed.

THE NEW BRITISH PHARMACOPEIA

THE new British Pharmacopeia which was issued and became authoritative in Great Britain on the first day of January, contains many important changes with which physicians should make themselves well acquainted. Many of the more inactive drugs have been deleted. About forty new drugs have been made official. Of these new drugs the names by which many hitherto have been known, and which for the most part are patented names, have been changed. Aspirin becomes acetyl salicylic acid; veronal is now barbitone, or malonurea; eucaine lactate is benzamine lactate; heroin hydrochloride is given the name of diamorphine hydrochloride; urotropine becomes hexamine; and trional is altered to methylsulphonol.

Among the more important additions to the Pharmacopeia are adrenalin and its liquor which remains as hitherto a solution of 1 in 1000 parts. Calcium lactate, chloral forma-

mide, glucose, guaiacol and guaiacol carbonate, phenolphthalein, pelletierine tannate, strontium bromide, theobromine sodio-salicylate, and zinc oleo-stearate, appear in the Pharmacopeia for the first time.

Changes have been made in the strength of many of the official preparations, in accordance with the recommendations of the International Committee appointed some years ago to adjust the differences between, and bring into more uniformity of strength, the preparations of the important drugs recognized in the various national Pharmacopeias of Europe and America.

In accomplishing this uniformity many preparations in frequent use in Canada have been weakened, while others have been made stronger. The more important of those reduced in strength are the following:

Dilute nitric acid, dilute phosphoric acid and dilute sulphuric acid, have all been reduced in strength by about one third, so that at the present they represent ten per cent. solutions. Plaster of belladonna now contains one half the alkaloidal strength that it had in the last Pharmacopeia.

Syrup of chloral, syrup of codeine phosphate, and syrup of the iodide of iron are slightly reduced in strength but the reductions are not important. Trinitrin tablets contain now only $\frac{1}{130}$ grain instead of $\frac{1}{100}$. The exact reason for this reduction in strength is not very apparent. Martindale in the last edition of the Extra Pharmacopeia calls attention to the unreliability of many tablet triturates in the market owing to their rapid deterioration on keeping. He insists that only those tablets with a chocolate and fatty basis are accurate and lasting.

Tincture of colchicum is reduced from 1 in 5 to 1 in 10. Tincture of digitalis from 1 in 6 to 1 in 10; while tincture of nux vomica is reduced to exactly one half the strength of the tincture of the Pharmacopeia of 1898.

Of the preparations which have been increased in strength the following are the more important. The strength of

vinegar of squills is doubled, syrup of chloral, and syrup of codeine phosphate are both increased in strength by twenty per cent. Tincture of aconite is doubled in strength of alkaloid. Tincture of opium is increased in strength by one third. In the Pharmacopeia of 1898 it contained 0.75 per cent. of morphine. In the present Pharmacopeia this is increased to one per cent. The compound tincture of camphor is also slightly increased and contains now 0.05 per cent. of morphine. Tincture of strophanthus is now quadrupled in strength and from containing 1 in 40 now contains 1 in 10.

We understand that all the more important drug houses are conforming to the demands of this new Pharmacopeia but great care must be taken with old stock, especially in the case of those preparations in which the change in strength has been so radical as in tincture of nux vomica and tincture of strophanthus. Unfortunately through an oversight, the Adulteration Act in force at the present mentions the Pharmacopeia of 1898 specifically, and leaves no room for the changes ordered in the edition of 1914, so that according to the reading of our laws the Pharmacopeia of 1898 for this year is nominally official.

By the next session of Parliament, a new bill will probably be passed remedying this oversight, and amending the Adulteration Act in several particulars.

In the meantime it will be wise for physicians prescribing preparations greatly altered in strength to place after the name of the preparations, the edition according to which he has directed the amount of drug to be taken (*e.g.*, B.P. 1914). The passage of such a bill rendering the successive editions of the British Pharmacopeia authoritative throughout Canada at the same date as they become authoritative in Great Britain would be expedited if the various medical and pharmaceutical associations in Canada during the summer would pass resolutions calling for the rectification of the present anomaly.

It may also be stated here that the members of the Committee on the Revision of the Pharmacopeia have on many occasions expressed themselves as open to suggestions from the medical or pharmaceutical associations of our Dominion, of India and the neighbouring colonies, and of Australia.

ABOUT one hundred Australian doctors left Melbourne for England on March 22nd, last. They will be followed shortly by a complete hospital unit.

AN important announcement was made at a meeting of the New York Pathological Society on April 14th, last, when Dr. H. Plotz, the young bacteriologist of Mount Sinai Hospital, stated that he had discovered the bacillus causing typhus fever. Dr. Plotz, when he succeeded in isolating the bacillus, was working on Brill's disease which has been proved to be identical with typhus.

A COMMITTEE has been appointed by the Militia Department to make arrangements for the reception and accommodation of soldiers invalided from the front. No definite information is as yet available. The Andrews Home, Montreal, has been converted into a convalescent home, and several people have offered their summer residences for the purpose. Amongst those received are offers from Sir William Mackenzie, Sir Rodolphe Forget, and Mr. D. Lorne McGibbon.

THE Kilingbeck Sanitarium for Tuberculosis at Leeds has been in existence less than two years, with accommodation for ninety male patients, and its superintendent is able to make the proud boast that no less than forty-seven of its discharged patients are now serving in the army. It is an encouraging record.

A LIST of additional subscriptions to the Relief Fund for Belgian Physicians and Pharmacists is given on another page of this issue. It is gratifying to note that the amount received by Dr. D. J. Gibb Wishart, the treasurer, is now over nine thousand dollars. The subscriptions received by Dr. Des Voeux, London, up to April 6th, amounted to nine thousand seven hundred, exclusive of the Scottish and Irish funds.

A SYSTEM of circulating country houses is now being organized in Russia. Seventy barges will be equipped with a staff and the necessary medical supplies and will contain comfortable quarters for sick and wounded soldiers. The barges will be towed by steamers to suitable spots on the Dneiper River and its navigable tributaries and will remain there for the periods of time judged expedient.

IN view of the urgent need for physicians, both military and civil, in Russia, it has been decided to interrupt the regular studies of medical students in all the universities. Instead of the regular curriculum special courses will be given in military field surgery and attention to the wounded, in the knowledge of internal complaints common in war, in military field hygiene, and in dealing with epidemics. The regular examinations will be delayed so that the students may give undivided attention to these special subjects.

AN effort was made recently to introduce into the Ontario Legislature a bill which would enable the chiropractors to establish a college and thus give professional standing to the followers of the cult. The proposed bill was discussed briefly in the Private Bills Committee. The Attorney General, however, declared that the government could not consider any such measure until the whole subject of medical education had been investigated by a commission to be appointed for that purpose.

DR. W. J. ROBERTSON, as chairman of the Ottawa Branch of the Canadian Red Cross, has issued an eloquent appeal to the farmers of the country for contributions to the funds of the Society to provide additional hospital beds and nurses in Great Britain and France. Such an appeal should meet with a ready response, not only for the sake of its object, but because it comes from Professor Robertson, who, as Commissioner of Agriculture, and more recently Chairman of the Royal Commission on Industrial Training and Technical Education, has done so much for the science and practice of agriculture in Canada.

AN easy method of sterilizing material for surgical dressings is recommended by Professor Weil, of Lyons, who finds that the temperature at which an iron is used by laundresses is about 150°C. This will cause hydroquinone to melt. To sterilize linen all that is necessary is to dampen it carefully and iron it with a sufficiently hot iron. The iron may be considered sufficiently hot when, on bringing it within a few centimetres of the cheek, a heat too powerful to be borne is felt. The method is carefully explained in the *Lancet*, April 10th, page 767.

THE third and fourth units of the Serbian Relief Funds Hospitals left London on April 1st. The third unit, Mrs. St. Clair Stobart's Hospital, is staffed almost entirely by women. The fourth unit, the British Farmers' Hospital, is under the administration of Mr. L. M. Wynch, C.I.E., and has a tent hospital to cover 300 beds, with baths, ice plant, and everything requisite for serum treatment. The third unit will be stationed at Salonika, and the fourth at Skoplje, where there are some 3,000 cases of typhus fever.

THE committee formed in Belgium to consider the needs of the doctors and pharmacists has been reinforced and is now known as the Aide et Protection aux Médecins et Phar-

maciens sinistrés. The president is Dr. Pechere and the secretary Monsieur Delacre. This body has worked in connexion with the National Relief Fund, and it was through the chairman of this fund, Mr. Herbert Hoover, that the British Committee has been able to distribute medical material in Belgium. In spite of immense difficulties, the Aide et Protection aux Médecins and Pharmaciens sinistrés has succeeded in organizing machinery for ascertaining the names of those in greatest need and for providing systematic relief. Forms have been issued to all doctors and pharmacists in which they are asked to state their position, the position of their families, the loss they have sustained, and the sum needed to tide them over their immediate difficulties. In estimating the validity of the claims made, the committee is assisted by the local medical societies and the government inspectors of pharmacy. In Brussels itself the poorer doctors and pharmacists have been aided by those in better circumstances, and thus the committee has been enabled to distribute the funds at its disposal throughout the country. Now that things are more organized, a sum of money has been forwarded by the London Committee and definite sums will follow from time to time. A generous response has been made from all parts of the Empire, but as the money is expended, more and more contributions will be required.

A WELL-DESERVED honour has been conferred upon Professor Adami in his appointment as Medical Historical Recorder of the Canadian Expeditionary Force, and no better choice could have been made. He has made a special study of the subject and particularly of that model work, the *Medical History of the War of the Rebellion*, a work which has hitherto been unique in the English language. Dr. Adami has been one of the most enthusiastic members of the McGill battalion, and took the earliest opportunity of qualifying in the Army Medical Corps. Joining the staff of No. 3 General Hospital (McGill) as Registrar, he was given the temporary

rank of lieutenant-colonel. After his recent appointment he was invited by the War Office to serve on a committee of twelve, under the presidency of the Director-General of Medical Services, charged with the compilation of a medical history of the British Expeditionary Force in this war. It may confidently be expected that the records which they will finally publish will reflect credit upon our profession, and will be looked back to by future generations without the disgust which, let us hope, will be inspired by the barbarous use to which we are putting the mechanical gifts of science. Dr. Adami left about the middle of April to take up his duties in London. His brother officers of the McGill Hospital hope that he may remain officially on their staff as supernumerary. At all events he will have occasion frequently to visit the Canadian military hospitals in the course of his duties.

THE following additional subscriptions to the Relief Fund for Belgian Physicians and Pharmacists have been received by the Treasurer:

Dr. Paul Scott, \$25.00; Manitoba Executive Committee, 4th remittance, \$372.50; Dr. J. E. Elliott, \$11.00; Dr. Large, \$5.00; Dr. Grant, \$3.00; Dr. J. S. Burrie, \$10.00; Dr. H. L. Burrie, \$5.00; Dr. T. Kearney, \$2.00; Dr. J. H. Clements, \$3.00; Dr. D. Mcklin, \$10.00; Dr. Ford, \$10.00; Dr. Rutherford, \$10.00; Dr. Deacon, \$10.00; Dr. Quinlin, \$10.00; Dr. Smith, \$10.00; Dr. Montieth, \$10.00; Dr. Fraser, \$10.00; Dr. Gemmel, \$10.00; Drs. Rankin and Cannon, \$10.00; Drs. J. A. and L. Robertson, \$10.00; Dr. Forester, \$10.00; Dr. Maynard, \$5.00; Dr. Gregory, \$2.00; Dr. Nasmith, \$2.00; Dr. Allen, \$2.00; Dr. Eassen, \$2.00; Dr. McKenzie, \$10.00; Dr. Hodge, \$10.00; Dr. Armstrong, \$10.00; Dr. Burley, \$10.00; Mr. Muir, \$2.00; Dr. Smith, \$10.00; Dr. Hurlburt, \$5.00; Dr. Smith, \$10.00; Dr. Fraleigh, \$10.00; Dr. Stanley, \$10.00; Dr. Brown, \$10.00; Dr. Knox, \$10.00; Dr. Tye, \$10.00; Dr. Campbell, \$10.00; Dr. King Smith, \$6.00; Mr. J. B. Dimmick, \$10.00; Mrs.

J. B. Dimmick, \$10.00; Dr. Galloway, \$3.00; Dr. C. L. Starr, \$10.00; Dr. J. Livingstone, \$1.00; Dr. E. Boyd, \$5.00; Dr. W. E. Gallie, \$5.00; Dr. Alan Brown, \$5.00; Dr. G. A. Campbell, \$5.00; Dr. Roy Smith, \$1.00; Dr. Allan Baines, \$10.00; Dr. D. McGillivray, \$5.00; Dr. Alan Canfield, \$5.00; Dr. A. C. Bennett, \$2.00; Dr. B. Hannah, \$5.00; Dr. Joe Graham, \$5.00; Medical Men of Guelph, \$60.00; Vancouver Doctors and Druggists, \$360.00; Dr. Hubbard, \$10.00; Dr. W. F. Clark, \$5.00; Dr. F. N. G. Starr, \$25.00; Dr. E. A. Robertson, \$2.00; Dr. J. T. Gilmour, \$15.00; Dr. C. H. Gilmour, \$10.00; Dr. Deacon, \$1.00; Dr. W. J. Harrington, \$5.00; Dr. R. B. Cuthbertson, \$5.00; Dr. W. Rogers, \$5.00; Dr. Bottomley, \$5.00; Dr. Wright, \$5.00; Dr. Heaslip, \$2.00; Dr. Robson, \$2.00; College of Physicians and Surgeons, Manitoba, \$1,000.00; College of Physicians and Surgeons, Victoria, B.C., \$263.00; From Nova Scotia, per Dr. Lindsay, \$487.00; Dr. Park, \$10.00; Dr. Hall, \$10.00;

THE seventh Pan-American Congress will meet in San Francisco, June 17th-21st inclusive. It assembles pursuant to invitation of the President of the United States issued in accordance with an act of Congress approved March 3rd, 1915. The countries and colonies embraced in the Congress are the Argentine Republic, Bolivia, Brazil, Canada, Colombia, Cuba, Chile, Costa Rica, El Salvador, Ecuador, Guatemala, Honduras, Haiti, Hawaii, Mexico, Martinique, Nicaragua, Panama, Paraguay, Peru, Santo Domingo, United States, Uruguay, Venezuela, British Guiana, Dutch Guiana, French Guiana, Jamaica, Barbadoes, St. Thomas and St. Vincent. The organization of the Congress is perfected in these countries and the majority of them have signified their intention to be represented by duly accredited delegates. The Congress will meet in seven sections, viz., 1, Medicine; 2, Surgery; 3, Obstetrics and Gynæcology; 4, Anatomy; Physiology, Pathology and Bacteriology; 5, Tropical Medicine and General Sanitation; 6, Laryngology, Rhinology and

Otology; 7, Medical Literature. All members of the organized medical profession of the constituent countries are eligible and are invited to become members. The membership fee is \$5, and entitles the holder to a complete set of the transactions. Advance registrations are solicited and should be sent with membership fee to the Treasurer, Dr. Henry P. Newman, Timken Building, San Diego, California. The general railroad rate of one fare for the round trip, good for three months, made on account of the Panama-Pacific Exposition at San Francisco, and the California Exposition at San Diego is available for the Pan-American Medical Congress. The Palace Hotel will be headquarters.

The First Pan-American Medical Congress was held in the United States in 1893. Five intervening Congresses have been held in Latin American countries. It now devolves upon the medical profession of the United States to make this, the seventh, the most successful in the series.

The president of the Congress is Charles A. L. Reed, Union Central Building, Cincinnati. Harry M. Sherman is the chairman of the committee of arrangements and should be addressed at 350 Post Street, San Francisco. The secretary-general is Ramon Guiteras, 80 Madison Avenue, New York. For information concerning hotel accommodation application should be made to Philip Mills Jones, 135 Stockton Street, San Francisco.

Book Reviews

DIFFERENTIAL DIAGNOSIS, VOLUME II. Presented through an Analysis of 317 Cases. By RICHARD C. CABOT, M.D., Assistant Professor of Clinical Medicine, Harvard Medical School. Octavo of 709 pages, 254 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$5.50; half morocco \$7.00.

A second edition of the first volume of this work recently appeared. It dealt chiefly with the symptom pain, and with eleven other symptoms. In the present volume some twenty additional symptoms are analyzed and illustrated. The same plan is carried out, a short discussion of the general indications of the symptom being followed by a large number of illustrative case reports, in which the differential diagnosis is carefully analyzed, and the result recorded. Where mistakes have occurred, the reasons for the mistaken diagnosis are fully pointed out, so that the reader is put on his guard against similar pitfalls. It might be supposed that a book consisting almost wholly of classified case reports would make wearisome reading. In these volumes, however, the reports are brief, but in no way stereotyped, and the author has succeeded in producing an admirable work, not only of reference, but one which encourages and well repays serious study. The illustrations are helpful, and a good index supplies necessary cross-references.

LECTURES ON THE HEART: COMPRISING THE HERTER LECTURES (Baltimore); **A HARVEY LECTURE** (New York); and **AN ADDRESS TO THE FACULTY OF MEDICINE OF MCGILL UNIVERSITY** (Montreal), By THOMAS LEWIS, M.D., F.R.C.P., D.Sc., Physician, City of London Hospital; Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, London. New York, Paul B. Hueber, 1915.

The opening pages of the chapter entitled, "The Excitation Wave in the Heart" are given to a clear and concise explanation of the theory of the electric curve recorded by a galvanometer connected to the two ends of a muscle in contraction. The form of the electric curves of the contracting heart muscles is governed by the same laws as is the contraction of a simple strip of somatic muscle.

The author's explanation of the origin and course of the excitation wave of the heart is based on the results obtained from a series of observations on the heart of the dog. His method is to compare simultaneous electrocardiograms, of which the contacts in one are applied to different parts of the heart, and in the other are applied to the right fore-leg and left hind-leg (lead ii). The excitation wave in the ventricle he shows to be dependent upon the distribution of the Purkinje system rather than on the direction of the muscle fibres. This chapter marks an advance in our knowledge of the physiology of the heart.

In the first of the three Herter Lectures he proves by a series of electrocardiographic records that the various altered mechanisms of the heart can be produced experimentally, and in this way illustrates the value of associating clinical with laboratory methods. The second Herter Lecture has for its subject, "The relation of auricular systole to heart sounds and murmurs." The aim of Doctor Lewis in all his work is to make of medicine an exact science. Here he makes use of the microphone, the records of which enable him to establish the important rôle played by the auricle in the production of certain heart sounds and murmurs, and to illustrate graphically the time-relations of such sounds with the different events of the cardiac cycle. He discusses at length the murmurs of mitral stenosis, the time of their occurrence, and their dependence upon difference of intracardiac pressure in auricle and ventricle. The last lecture of the series has to do with "Observations upon dyspnoea with especial reference to acidosis." This chapter deals more particularly with chemical pathology and is based on the work of the author in collaboration with Barcroft. The dyspnoea of cardio-renal disease, as well as the breathlessness of certain other morbid conditions, is to a large extent brought about by an increase of non-volatile acids in the blood. The cause of such change in the reaction of the blood may be renal insufficiency, or may be some alteration in the metabolism of the organism. Such work is fundamental in character and tends to shatter our old traditions of insufficient aeration of the lungs with consequent accumulation of carbon-dioxide in the blood as the cause of breathlessness.

The fifth lecture is of particular clinical value; its title is "Observations upon cardiac syncope." That syncope may result from certain alterations in the heart's mechanism, such as complete heart-block, has long been known. That it can be brought about by other altered mechanisms, as paroxysmal tachycardia and auricular flutter is clearly shown. Syncope followed by death

from ventricular fibrillation is suggestive, and offers a field for research from which much can be expected. T. F. C.

PASTEUR AND AFTER PASTEUR. By STEPHEN PAGET, F.R.C.S., Hon. Sec. Research Defence Society. 152 pages, with eight page illustrations. Medical History Manuals. London: Adam and Charles Black, 1914.

The author, in his preface, rightly says that M. Valery Radot's "Life of Pasteur," which was translated into English by Mrs. Devonshire, with an admirable preface by Sir William Osler, is one of the best of all books, and Mr. Paget hopes that his own little book may be regarded as a sort of signpost on the way toward the well-beloved *Vie de Pasteur*. It has been said of Pasteur that he was "the greatest man who ever entered into the kingdom of Science," and few who have had the privilege of reading the larger "Life" will be inclined to think the statement exaggerated. In the present book also the beautiful character of the man stands out, and the wonderful development of his genius is traced. To us, looking back, the progress of his researches seems almost inevitable—from chemistry to crystallography, leading in turn to fermentation, to the diseases of wine, to those of silk-worms, of poultry, of sheep, and of man, and making possible the work of Lister and the science of bacteriology. More than half the book is taken up with these two immortal names. The rest deals with the later development in our life-saving knowledge of the epidemic diseases, from tuberculosis and diphtheria to the recent conquest of yellow fever. Mr. Paget's mastery of English is well known. His book will appeal not only to the physician. It is extraordinarily free from technical language, and no better work could be put in the hands of the layman willing to learn of the hopes and triumphs of preventive medicine, and the steps by which they have been realized.

THE following doctors left New York on April 17th. They form the personnel of two Red Cross Field Hospitals, which will be attached to the Belgian army and stationed at La Panne. Dr. Albert R. Goodman, of New York, Dr. William H. Morris, of Baltimore, Dr. John D. Spellman, of Cincinnati, and Dr. Karl B. Morrow. On arrival in England they will be joined by Dr. Robert W. Hinds, of Buffalo and Dr. William T. Fitzsimmons, of Kansas City.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

PRACTICAL MEDICINE SERIES. Edited by C. L. MIX and R. T. VAUGHAN. Chicago: Year Book Publishers, 1914. Vol. VII. Obstetrics. Edited by J. B. DELEE, with the collaboration of H. M. STOWE. Price, \$1.35. Vol. VIII. Materia Medica and Therapeutics; Preventive Medicine; Climatology. Edited by G. F. BUTLER, H. B. FAVILL, NORMAN BRIDGE. Price, \$1.50. Vol. X. Nervous and Mental Diseases. Edited by H. T. PATRICK and PETER BASSOE. Price, \$1.35.

SELECTED ADDRESSES ON SUBJECTS RELATING TO EDUCATION, BIOGRAPHY, TRAVEL, ETC. By JAMES TYSON. Philadelphia: P. Blakiston's Sons and Company, 1914.

NURSING ETHICS. By T. P. C. KIRKPATRICK, M.D. Dublin: University Press, 1915. Price, 1s. net.

TEXT-BOOK OF THE PRACTICE OF MEDICINE, FOR STUDENTS AND PRACTITIONERS. By H. A. HARE, B.Sc., M.D. Third edition, revised and enlarged. Philadelphia and New York: Lea and Febiger, 1915. Price, cloth, \$6.00 net.

INTERNATIONAL CLINICS, VOLUME I, TWENTY-FIFTH SERIES. Edited by HENRY W. CATTELL, A.M., M.D. J. P. Lippincott Company, Philadelphia and London, 1915.

LECTURES ON THE HEART, COMPRISING THE HERTER LECTURES (Baltimore); A HARVEY LECTURE (New York); AND AN ADDRESS TO THE FACULTY OF MEDICINE, MCGILL UNIVERSITY, (Montreal). By THOMAS LEWIS. Hoeber, New York, 1915. Price \$2.00 net.

Res Judicatæ

FEEBLE-MINDEDNESS AND THE STATE

ON page 405 of this issue will be found the results of eighty-seven mental tests carried out by Dr. Mundie at the Boys' Farm, Shawbridge. Dr. Mundie's paper is sufficient in itself to indicate the gravity of the situation, but some further statistics may be of interest, particularly just now when questions bearing on the future of the race assume an additional importance. According to a conservative estimate, there are in Canada at least 25,000 mental defectives; in the province of Ontario there are at least 5,000, and in Quebec no less than 6,000. In the latter province it is difficult to make a correct estimate as, in the absence of compulsory education, psychological clinics, or other means of detecting cases, it is impossible to obtain reliable information and, in the case of children, those who obviously are defective are usually kept at home. Dr. Helen McMurchy, inspector of the auxiliary classes recently established in Ontario, estimates that there are at least 2,000 feeble-minded children in the ordinary schools of the province, and that thirty-three per cent of those in the industrial schools and fifteen per cent. of those brought before the Juvenile Court of Toronto are mentally defective. In April, 1914, scientific tests of the mentality of eight inmates of the Girls' Cottage Industrial School at St. Lambert, P. Q., were made by Dr. Tait, professor of psychology at McGill University. All were morons, that is, mental defectives of the higher grade. Seven of the eight had been born in the Old World. Dr. Tait also examined thirty-seven children selected at random at another institution in Montreal; of these only fifteen were normal. In another case thirteen out of twenty children examined showed two or three years retardation and were, presumably, feeble-minded. In Great Britain things are even worse. In the report of the Royal Commission, published in 1908, it is stated that at least 120,000 persons in England and Wales are mental defectives and that 66,000 were in urgent need of proper care. This estimate was considered too low by Dr. Tredgold, a member of the Commission, who thought that there were at least 150,000 feeble-minded persons in England and Wales alone. In the *Journal of Heredity*, January, 1915, Dr. Goddard states that there must be between

300,000 and 400,000 feeble-minded persons in the United States, with many more in whom mental defect is latent, and it is believed that in the State of New York alone there are 30,000 feeble-minded persons. The results of tests made by the Binet-Simon and other approved methods have made it sufficiently clear that mental deficiency is associated with criminal tendencies. The first Ontario census of the feeble-minded was taken in 1906 and revealed the existence of 1,000 mental defectives supported by public charity. Mr. Chadwick, superintendent of dependent and delinquent children in Alberta, in March, 1915, stated that 200 children ranging from idiots to morons had come under his notice, and Mr. Page, superintendent of neglected and dependent children in Saskatchewan, at the present time has under his care at least twelve boys suffering from extreme mental defects. In the United States Goddard estimates that from 25 per cent. to 50 per cent. of all classes of criminals in that country are mental defectives, and his findings are corroborated by the work of Fernald and others. In England the reports of the Royal Commissions show that paupers, drunkards, prostitutes and criminals are recruited from the ranks of the feeble-minded. Until quite recently the prevailing opinion was that feeble-mindedness was the result of other evils, but in the light of recent research, the picture is reversed and evidence points rather to the fact that excesses and crime are the result of low mentality, and that mental deficiency in all its stages is directly inherited and incurable. In a work entitled "Feeble-mindedness," Dr. Goddard has recently published the family histories of the inmates of the institution at Vineland, New Jersey. He gives genealogies of 327 families, including 11,389 individuals and finds that 54 per cent. had inherited feeble-mindedness directly from their parents and that 73 per cent. belonged to families with marked hereditary neuropathic tendencies. No geniuses were discovered in any of these families and the majority of the so-called normal members were of a low grade of intelligence. All doubtful individuals were classed as normal. It is unnecessary here to enumerate further instances, but to illustrate the expense incurred by the state, mention may be made of the famous Jukes family studied by Dugdale, which has already cost the State of New York over \$1,250,000.

Studies have been made of the effect of immigration on the proportion of feeble-minded people, both in Canada and in the United States, and it has been found that the increase in crime, as a whole, and in offences against the person have been in proportion

to the increase in immigration. Obviously, redress lies here in stricter immigration laws.

Human nature is always prone to procrastination, and the segregation of defectives, the only effective measure, involves the expenditure of large sums of money which at this juncture can ill be afforded. The advantages of segregation have been proved by the success obtained in Northern Italy, where in the valley of Aosta cretins have almost disappeared. For centuries the goitrous cretin had been an object of charity and the number had increased until the neighbourhood was infested with them. In 1890 the sexes were segregated in separate colonies and in 1910 they had practically disappeared.

The question of feeble-mindedness is not one that can be adequately dealt with by any one province; the efforts of one province may be nullified by the carelessness of another. It is a matter that should be dealt with by the Federal Government. The National Council of Women of Canada have realized this and on March 12th, last, a delegation from the Council waited upon the Premier with the request that a Royal Commission be appointed to consider the matter of mental deficiency. Sir Robert Borden promised that the request should receive consideration. A similar appeal was made to Sir Lomer Gouin, premier of the province of Quebec, by the Montreal Local Council of Women, supported by many other societies both Protestant and Roman Catholic.

A PRIZE of \$1,000 is offered by the Metropolitan Life Insurance Company to be awarded by a committee of judges selected by the American Social Hygiene Association to the author of the best original pamphlet on social hygiene for adolescents between the ages of twelve and sixteen years. Manuscripts should not exceed 3,500 words; they must be original and must be written in the English language. They should be addressed to The American Social Hygiene Association, 105 West 40th Street, New York, and must be received not later than July 31st, next. Further information may be obtained from the above association.

Obituary

DR. ALEXANDER A. DAME, of Toronto, died suddenly March 23rd, in the sixty-ninth year of his age, when on his way to attend the funeral of a friend. Dr. Dame graduated from Queen's Medical College in 1886. He practised first at Jordan and from there went to Toronto. He then went to Europe and took up the study of the eye, ear, nose and throat. On his return to Canada in 1905 he went into practice at Galt, but three years later returned to Toronto. Dr. Dame was a member of the militia and was regimental surgeon of the 48th Highlanders. He leaves one son.

DR. CYRUS SMITH died in March at Glanford, Ontario.

DR. WILLIAM R. BELL, of Ottawa, died March 22nd, at the age of eighty-one years. Born in England, at Thirsk, Yorkshire, in 1833, Dr. Bell came to Canada in 1866. He had already studied medicine at Marshall College, Aberdeen, and had also done post-graduate work in Scotland and on the Continent. He became well known as a surgeon and continued to practise until about six months before his death. Dr. Bell was director of the Protestant General Hospital for many years. He was surgeon of the Ottawa Field Battery and an officer in the Governor-General's Foot Guards retiring with the rank of lieutenant colonel. He leaves a widow and seven sons, one of whom is Dr. David W. Bell, of Ottawa.

DR. J. R. CLOUSTON, of Huntingdon, Quebec, died March 29th. Dr. Clouston was born in the Orkneys, Scotland, in 1857; two years later he came with his parents to Leeds, Megantic County, Quebec. In 1888 he graduated from McGill University. He practised at Howisk for two years and then went to Huntingdon, where for twenty years he has been coroner. He leaves a widow, one son, Dr. Howard Clouston, and four daughters.

DR. ENOCH EMERSON died at Spring Arbor, Michigan, March 25th, in the fifty-first year of his age. Dr. Emerson was born at Mersea, Ontario.

DR. ARTHUR G. ALLAN died from heart failure at Valleyfield on Saturday April 3rd. He was over sixty years of age.

DR. T. A. AMOS, of Exeter, Ontario, died March 25th, in the fifty-fifth year of his age. Dr. Amos was well known throughout the district and had a large practice; in fact, a short time ago, his health compelled him to give up his practice in Ontario. He went to Alberta and practised there for a short time but returned to Exeter. He graduated from Trinity Medical College; after graduation he went to Glasgow, Edinburgh, and London, where he did some postgraduate work and obtained the degrees of L.R.C.P. and L.R.C.S.

DR. OVIDE LESAGE, of Saint-Tite de Champlain, Quebec, died of pneumonia April 2nd, in the thirty-first year of his age. Dr. Lesage graduated from Laval University in 1909. He leaves a widow.

DR. HERBERT HUNTINGTON READ, of Halifax, died April 5th. Dr. Read, who was about seventy-five years of age, was born at Minudie, Nova Scotia; he graduated from McGill University in 1861, and then went to Edinburgh where he obtained the degree of L.R.C.S. Dr. Read afterwards went to the United States and took up the study of homeopathy, which he practised during his long residence in Halifax. He leaves two sons and four daughters.

DR. O. C. EDWARDS died April 4th, at the age of sixty-three years. Dr. Edwards died at the Indian Blood Reserve, near Macleod, Alberta. He had been government physician on Indian reserves since 1887.

DR. GEORGE FORD, of Stratford, Ontario, died April 19th, in the thirty-eighth year of his age. Born and educated in Listowel, George Ford taught for a few years before entering upon the study of medicine. He graduated from the University of Toronto as silver medalist in 1906, after which he did post-graduate work in England and Scotland. He practised at Shakespeare for seven years and last year removed to Stratford. He leaves a widow and one son.

DR. J. W. CORRIGALL, of Limerick, died at Weyburn, Saskatchewan, April 13th, in the thirty-sixth year of his age. Death was due to pneumonia. He leaves a widow and one child.

DR. JAMES SPENCE, of Toronto, died April 19th, in the sixty-first year of his age. Dr. Spence was born at Elora in 1854; he was educated at Rockwood Academy and graduated from the University of Toronto in 1884. He first practised at Millbank and in 1886 removed to Toronto. Dr. Spence took an active interest in educational work. He leaves a widow, one son, and one daughter.

DR. JAMES E. GRIFFITH, of Edmonton, Alberta, died March 5th. Dr. Griffith was born at Woodstock. He first went into practice at St. John, New Brunswick, but for the past twenty years had practised in the West. His wife predeceased him by eleven days.

DR. ANGUS A. McLELLAN, of Summerside, Prince Edward Island, died in Montreal March 20th, in the fifty-eighth year of his age. Death was due to an accident sustained in Montreal while Dr. McLellan was visiting his son who is at McGill University. Dr. McLellan was born at Grand River; he graduated in medicine from McGill in 1889. He went into practice at Souris and, in 1904, removed to Summerside and took up the practice of his brother, the late Dr. James McLellan. He leaves a widow, five sons, and three daughters.

DR. GEO. H. SWEET died at Saginaw, Michigan, in the forty-fourth year of his age. Dr. Sweet was born in Hamilton, Ontario.

DR. R. T. AIKMAN, of Grimsby, Ontario, died from pneumonia on April 13th. Dr. Aikman, who was a son of the late Colonel John Aikman, was born at Ancaster in 1841. After graduating from McGill University, Dr. Aikman went into practice at Burlington. He removed from there to Collingwood where he continued to practise until about eight years ago. He leaves a widow and one son.

DR. DONALD PERCY MCCREA died at Cohocton, N.Y., April 11th. Dr. McCrea was born at Easton's Corners, Ontario. He graduated from Queen's University in 1901.

AMONG the victims of the typhus fever epidemic in Serbia is Dr. Ernest P. Magruder, of Washington. Dr. Magruder was serving with the American Red Cross at Belgrade.

News

ONTARIO

AN outbreak of typhoid fever is reported from Point Anne, near Belleville.

THE Galt hospital by-law was passed recently with a majority of eighty-two votes. It provided \$15,000 to pay off a deficit on the new wing of the hospital.

THE annual meeting of the London Health Association was held April 9th. Sir Adam Beck was unanimously reelected president of the Association.

DR. H. A. BOYCE, who has been medical superintendent of the Kingston General Hospital for the past seven years, has resigned and intends to go into practice in Kingston. His successor is Dr. D. A. Coon. Dr. Coon graduated from Queen's in 1890 and has been practising in Elgin until a few months ago, when he removed to Kingston.

THE St. Joseph's Hospital at Hamilton is to be enlarged. It is proposed to spend \$125,000; the plans were prepared some months ago, but it was considered wise to delay the work for a time.

DR. J. P. SINCLAIR has been appointed medical officer of health of Gananoque.

THE question of reform in the Dominion penitentiaries is now receiving the consideration of the Department of Justice and new regulations are being drafted in accordance with the suggestions made by the recent Royal Commission on the Kingston Penitentiary and the views of the wardens of the various prisons in the Dominion.

THE Brantford General Hospital has been enlarged. The new wings were formally opened April 15th.

DR. J. W. S. McCULLOUGH has been appointed assistant sanitary expert to the International Waterways Commission.

MARITIME PROVINCES

DR. DAVID TOWNSEND, Superintendent Jordan Memorial Sanatorium, River Glade, N.B., visits Fredericton, first Wednesday; St. John, first Thursday; and Moncton, second Thursday of each month, for the purpose of conducting a clinic in tuberculosis, in the interests of the Jordan Memorial Sanatorium. These clinics, although primarily for the selection of cases for the Sanatorium, are open to anyone, free of charge, for opinion and advice in tuberculosis.

It is proposed to build a civic hospital at Sydney, Nova Scotia.

QUEBEC

THE fourth annual meeting of the District of Bedford General Hospital at Sweetsburg was held March 24th. The superintendent reported that during the year 1914 one hundred and nine patients were treated in the hospital, ninety-nine were discharged, and eight died. In the outdoor clinic two hundred and sixty patients received treatment.

THE thirty-fourth annual meeting of the Notre Dame Hospital, Montreal, was held on March 30th. The financial statement for the year 1914-15 showed a deficit of \$3,502; the members of the executive committee, however, have come to the aid of the hospital and had subscribed \$4,480, so that the present financial year commences with \$978 in hand. During the past year 2,464 patients were treated in the hospital, the average length of time each patient stayed in the hospital being eighteen and one-half days. In the dispensary 22,579 consultations were given. The report was read of the superintendent of the St. Paul Hospital. The lack of accommodation made it necessary to refuse admittance to 102 patients during the year. The number admitted was 1,183, including 479 cases of diphtheria, 424 of scarlatina, and 154 of erysipelas. The death rate was 8.1 per cent.

THE Andrews Home, Montreal, has been converted into a convalescent home for soldiers with accommodation for seventy patients. It is intended primarily for soldiers invalided from the front, who are expected as soon as navigation opens, but it will also be used for men who have become sick while in training and who have been discharged from hospital but are not fit for duty.

The home was formally opened by the H. R. H. Duke of Connaught on Wednesday, April 21st. On Tuesday, the 20th, H. R. H. the Duchess of Connaught paid a visit of inspection to the Montreal Foundling and Baby Hospital. H. R. H. unveiled a tablet to the memory of the late Colonel J. H. Burland, to whom the hospital owes so much.

MANITOBA

SCARLET fever is reported to be very prevalent among the school children of Portage la Prairie.

ALBERTA

DR. GEORGE R. PIRIE, of Calgary, has been appointed superintendent of the Great Ormonde Street Hospital for Children, London.

THE annual meeting of the Red Deer Memorial Hospital took place March 30th. During the twelve months under consideration 260 patients were admitted, 249 were discharged, and 10 died.

DR. ROBERT WOODS, medical officer of health at Leduc, has resigned.

SASKATCHEWAN

THE provincial hospital at North Battleford is to be enlarged by the addition of a 360-foot wing. Construction is to be commenced at once.

BRITISH COLUMBIA

THE sum of \$469.57 has been forwarded to England by the St. John Ambulance Association of British Columbia. The money has been subscribed towards the maintenance of a cot in the hospital provided by the St. John Ambulance Brigade.

DR. W. D. KEITH, president of the Vancouver Medical Association, and Dr. Underhill, of Vancouver, have been officially appointed examiners for the Red Cross. The lecturer in hygiene, sanitation, home nursing, and first aid is Dr. Scarlett-Synge.

MEDICAL COLLEGES

McGill University

THE convocation held on Thursday, April 22nd, was an event unique in the history of McGill University. The University was honoured by the presence of Their Royal Highnesses the Duke and Duchess of Connaught and the Princess Patricia. The students and most of the professors were in uniform, as befitted the occasion: that of conferring degrees on members of the McGill Military Hospital. His Royal Highness presented the diplomas, the degrees being conferred by Principal Peterson. The following is the list of candidates who received their M.D., C.M.

G. R. Baby, of Hamilton, Ont.; P. B. Belanger, Bridgetown, Barbados; O. Demuth, Penticton, B.C.; H. E. H. Eberts, B.C.; C. D. Kean, Brockfield, Bonavista Bay, Newfoundland; G. L. D. Kennedy, Ottawa, Ont.; G. F. Laing, Windsor, Ont.; L. H. Leeson, Vancouver, B.C.; B. F. MacNaughton, Hopewell Cape, N.B.; H. K. Neilson, Arnprior, Ont.; I. D. Ramsay, Waskada, Man.; A. D. Sharp, Summerside, P.E.I.; D. Lee Smith, Vancouver, B.C.; W. Templemen, St. John's, Newfoundland; F. S. Walcott, St. James, Barbadoes; C. O. Walsh, Guysboro, N.S.; H. C. West, Avonmore, Ont.; A. B. Wilkes, Brantford, Ont., and R. D. Wilson, Hull, Iowa.

The degree of Bachelor of Arts was conferred upon William Wentworth Beveridge, of Vancouver; Clinton Edgar Manning, of Magog, Que.; and Walter de Mouilpied Scriber, of Westmount, and the following were recipients of the degree of Bachelor of Science in Agriculture, Henry Illsley Evans of Hampton, King's County, N.B.; Richard Edey McKecknie of Wyman, Que.; Homer Dean Mitchell of Drummondville, Que.; and Harold Freeman Williamson, of St. Anne de Bellevue, Que.

In addition to these, the degree of B.A. *ad eundem* was conferred upon Major Allan Angus Magee, a graduate of Toronto University, in recognition of his services in connexion with the training of the McGill Battalion.

His Royal Highness spoke in warm terms of the hospital unit, which was reviewed on the campus just before convocation. The nurses who will accompany the hospital were drawn up on the left and the dark blue of their uniforms was in pleasant contrast to the khaki of the officers and men. The inspection was watched with interest by T. R. H. the Duchess of Connaught and

the Princess Patricia, who were presented with bouquets of roses, tied with the McGill colours, by Mrs. Birkett and Mrs. Yates.

In the evening, His Royal Highness was the guest of the officers of No. 3 General Hospital at a dinner given at the barracks, St. George's Home. The Duke was accompanied by his aides, Col. Stanton and Major Duff, and there were also present: Col. E. W. Wilson, O.C. 4th Division; Principal W. Peterson; Prof. A. D. Blackader, acting dean of the faculty of medicine at McGill during the absence on active service of Col. H. S. Birkett; Lieut.-Col. H. M. Jaques, who is proceeding to England as deputy assistant director of medical services, C.E.F., and Lieut. von Eberts.

Col. H. S. Birkett presided, and the other officers of the hospital present were: Lieut.-Col. H. B. Yates, second in command; Lieut.-Col. J. M. Elder, Major E. W. Archibald; Major W. H. P. Hill, Major A. C. P. Howard, Major J. C. Meakins, Capts. J. G. Browne, H. C. Burgess, H. C. Dixon, W. T. Ewing, W. W. Francis, A. T. Henderson, D. A. Hingston, W. B. Howell, J. W. Hutchinson, D. Law, H. M. Little, J. A. MacMillan, L. H. McKim, R. St. J. Macdonald, R. H. Malone, A. H. Pirie, A. Stevenson, L. L. Reford, L. J. Rhea, R. Robertson, C. K. Russel, F. W. Tidmarsh, L. H. Thornton, W. G. Turner, J. C. Wickman and W. A. Wilkins.

Toronto University.

THE following received their medical degree from the University on Friday, April 9th, preparatory to accompanying No. 4 General Hospital: R. S. Armour, C. R. B. Crompton, J. R. Howitt and H. B. Van Wyck.

THE university authorities are sparing no effort to make the base hospital which has been accepted by the War Office as efficient as possible. The hospital will consist of 1,040 beds. The staff will be composed of one colonel, four lieutenant-colonels, eight majors, twenty-six captains, two quartermasters, four warrant officers, two matrons, eighty-four nursing sisters, and two hundred and eighty-four rank and file. This means that forty-five men must be provided from the present staff of the university. A prompt response has been made by the nurses and more than one hundred have volunteered already. The government will grant the equipment required by military regulations, but small provision is made for the equipment of laboratories, an important part of any efficient hospital. In addition to that required for laboratories and that provided by the government, further equipment is

needed; and, similarly, in other departments of hospital work a considerable expenditure of money must be made; it is estimated that at least \$25,000 will be needed and an urgent appeal is made for financial assistance. All subscriptions may be sent to Dr. A. Primrose, Secretary of the Faculty of Medicine, University of Toronto.

The unit will be known as No. 4 General Hospital and the following, it is expected, will be the personnel: Colonel J. A. Roberts, in command. Major W. B. Hendry, Captain N. J. L. Yellowlees. The surgical staff will consist of Drs. Alex. Primrose and Walter McKeown (equal military and surgical rank), Dr. J. Malloch, Dr. B. P. Watson, Dr. E. S. Ryerson, Dr. George E. Wilson, Dr. Robert Gaby, Dr. F. W. Watts, Dr. J. G. Gallie and Dr. H. Wookey. The medical staff will consist of Drs. Andrew Gordon and Graham Chambers (equal military and medical rank), Dr. Chas. S. McVicar (secretary registrar), Drs. Donald McGillivray, Harold Parsons, D. K. Smith, Geo. F. Boyer, R. G. Armour, J. H. McPhedran and S. R. D. Hewitt. Dr. Gilbert Royce will have charge of the nose and throat department; Dr. W. E. Lowrie will have charge of the eye department; Dr. Robert Pearse will be chief in genito-urinary work; Dr. J. A. Amyot will be placed in charge of sanitation. The laboratory staff will be composed of Drs. Duncan Graham, N. C. Sharpe, A. A. Fletcher and C. J. Imrie. Dr. Geo. Gow will be the dental surgeon. A most efficient nursing staff has been secured. The nurses have been chosen exclusively from the standpoint of efficiency and the result is an unusually capable staff.

No. 2 Clearing Hospital, which was mobilized at the old General Hospital on Gerrard Street, is ready to leave for the front. The officers are: Lieutenant-Colonel G. S. Rennie, Lieutenant-Colonel J. E. Osborne, and Major R. Davey, of Hamilton; Major F. W. E. Wilson, of Niagara Falls; and Captain George S. Strathy, Captain H. L. Jackes, Captain L. B. Robertson, and Captain G. B. Strathy, quartermaster, all of Toronto. The medical staff consists of fourth and fifth year medical students. The latter were given the degree of Bachelor of Medicine the last week of February and have since received automatically the rank of lieutenant. They are: Lieutenants Gerald Allison, Stanley Stafford Ball, Arthur McKnight Bell, M.A., Leeming Anderson Carr, Henry Arthur Cates, John Chassels, Frederick Russell Gillrie, Morley Edward Gorman, Frederick Walter Clement, Richard Collier Coatsworth, B.A.; Harold Parrish Hamilton, Maurice Round Helliwell,

William Wray Hodge, B.A., Herbert Carl Martin, Athol Alexander Moon, Paul Michael O'Sullivan, M.A., Reginald Paul, Harry Roy Smith, Thomas Harold Douglas Storms, B.A., Stanley Young Walsh, David Edmund Staunton Wishart, B.A. The fourth year men who accompany the hospital are: W. E. Hodgins, A. C. Norwich, A. R. Hagerman, A. E. Macdonald, W. C. Connell, J. A. Stanley, A. B. Jackson, A. R. Lindsay, L. R. Hill, P. A. Sarjeant, M. J. Wilson, J. H. Sharpe, G. Scullard, W. B. Rutherford; and in addition there are the following third year men: H. C. Cruikshank, J. S. Reid, G. F. Sykes, and J. H. Howell. The two doctors of dentistry, who received their degrees, are Richmond Henry Atkey and Albert Gordon Lough. Captain L. E. Williams, formerly a resident member of the staff of the Toronto Asylum is also accompanying the hospital.

With the present staff of fifty-two officers and men there will go a large number of service men, bringing the final complement to seventy-seven, but these have not all been selected. They will consist of carpenters, cooks, bricklayers, one barber and several mechanics. Some of these are already under orders at the old General, and are being utilized in the construction of immediate needs.

The hospital equipment will not be provided until the men reach England, and no patients will be treated until the clearing hospital reaches the front. The duties of this hospital differ entirely from those of the University base hospital. The clearing hospital carries with it no nurses, and follows closely the line of battle, establishing its temporary camps in the wake of the ambulances. The wounded are brought here first, and after treatment are removed to the base hospitals.

Queen's University

THE military hospital offered by Queen's University, and accepted by the War Office, will be designated No. 5 Stationary hospital. Official confirmation of the personnel has not yet been received from Ottawa, but the following is the list of officers submitted: Officer in command, Lieut.-Col. Etherington; surgeons, Capt. C. E. Kidd, Lieut. Ballantyne, Lieut. Polson; civil surgeons, Dr. Anglin, Dr. W. T. Connell, Dr. Garfield Platt; dental surgeon, Capt. Ernest Sparks; radiographer Lieut. J. P. Quigley; quartermaster, the Hon. Capt. Jas. Wallace, Chaplain of the 45th Regiment.

Two hundred beds will be provided and to obtain the necessary equipment for an efficient hospital, at least \$5,000 will be required. Subscriptions to the amount of \$1,345 have already been received and no doubt, as in the case of the hospitals given by McGill and Toronto universities, graduates and friends of the university will respond generously to the needs of the occasion. A subscription of \$25.00 will purchase the supplies necessary for one bed, which will be named after the donor. While the hospital is on active service, an effort will be made to send \$300 a month towards its maintenance.

ARMY MEDICAL SERVICES

A WESTERN contingent of the Army Medical Corps, in command of Captain Crowe, of Winnipeg, left Halifax early in April. It comprised detachments from Victoria, Vancouver, Edmonton, Calgary, and Winnipeg, and was accompanied by twenty-five members of the Army Medical Corps from Halifax. Among the members who will serve in various hospitals in France, particularly in Nos. 1 and 2 Stationary Hospitals, were fourteen officers and seventy-two men from Winnipeg, commanded by Captain Powell, of Saskatoon; six officers and twenty-five men from Vancouver and an equal number from Calgary. The officers in the detachment from Calgary were Lieutenants W. J. McAllister and T. M. Taylor, of Calgary; Lieutenants W. H. Scott and H. J. Collins, of Edmonton; Lieutenant T. W. Moore, of Lundbreck, and Lieutenant T. S. Tupper, of Claresholm. The Vancouver detachment included Captain Ridewood, Captain McLellan, Lieutenant Rice, Lieutenant McMain and Lieutenant Hall.

DR. HERBERT E. CLUTTERBUCK, of Toronto, has been appointed chief surgeon at No. 13 Base Hospital, Boulogne, in succession to Major Butler, who was taken ill.

THE following Canadian doctors have been accepted by the Serbian government for civilian practice in Serbia: Ferdinand Perras, Montreal; Irma LeVasseur, Quebec; Brault, Port Daniel; J. Richardson, Quebec; Albert Palin, Winnipeg; John Hetherington, Carievale, Saskatchewan; W. Bourjeantz, Marcellin, Saskatchewan; P. E. Lavoie, Marcellin, Saskatchewan; A. W. M. Leclair, Letellier, Manitoba, and A. Avila Walters, Quebec. Physicians must be prepared to practise in Serbia for at least three months. Travel-

ling expenses will be paid and salaries will commence from the date of arrival in the country. In case of death, the sum of \$2,000 will be paid to surviving relatives.

DR. OSCAR A. CANNON, of Stratford, Ontario, left Halifax on April 10th, on his way to the Front. Dr. Cannon will probably serve as surgeon-in-chief to the Army Medical Corps reinforcements.

A REQUEST was made a few weeks ago through the Director-General of Medical Services, Ottawa, for additional names of medical practitioners willing to join the services. The rate of remuneration will be twenty-four shillings a day with rations or allowance; £30 for outfit allowance and £7 10s. for camp kit. The period of service will be for one year, or as long as required, with a gratuity of £60 on expiration of service and free passage to England. Doctors must be under forty years of age and must join the Canadian Army Medical Corps. Practitioners from provinces which have established reciprocal relations with the British General Medical Council only will be accepted. Nearly one hundred and twenty-five doctors from the province of Ontario alone responded to the appeal and the following have been accepted: E. F. Frederick, Peterboro; J. F. McLay, Grimsby; J. W. Sutherland, Ottawa; G. C. Anglin, Weston; T. O. Hutton, Sault Ste Marie; Victor McWilliams, Toronto; W. E. Pickup, Fort William; J. C. McLeod, Kincardine; A. F. Mavety, West Toronto; R. E. Hotkins, Toronto; J. N. Humphrey, Toronto; F. M. Walker, Toronto; H. W. Kerfoot, Penetang; K. G. McKenzie, Exhibition Camp; F. W. M. Smith, Bayfield; N. King Wilson, Toronto; O. W. Colbeck, Haileybury; A. Henderson, Toronto; R. Tennent, Belleville; E. A. Urie, Guelph; C. F. Wright, Iroquois Falls; F. J. Livingstone, M. H. Patterson, Toronto; Austin Evans, Whitby; H. Crassweller, Windsor; J. V. Brown, Exhibition Camp, Toronto; R. L. Shields, Port Hope; W. J. Marcey, Parry Sound; F. J. Colling, Toronto; A. H. Machlen, Goderich; L. M. Dawson, Ottawa; K. M. Simon, Toronto; R. H. Bonnycastle, Campbellford; J. J. Middleton, Toronto; J. Edward Knox, Toronto.

Two deaths from cerebrospinal meningitis have occurred among the members of the 29th Battalion stationed at Belleville.

DR. NEILEY, of New Glasgow, Nova Scotia, is serving with one of the hospitals in France.

DR. THOMAS STANLEY RIPPON, of Edmonton, has joined the R.A.M.C. Dr. Rippon went to England last November.

DR. L. C. HARRIS, of Edmonton, has enlisted as a surgeon in the A.M.C.

THE offer made by the physicians of Peterborough, Ontario, to organize a base hospital for service in any part of Europe, including Serbia, has been accepted. The unit will be equipped by the government but the expenses of maintenance while on service will be defrayed by the citizens of Peterborough. The physicians of the city who are not on active service will contribute \$50 a month, the lawyers an equal sum, and the citizens the balance of the amount required. Sheets and other supplies will be provided by patriotic societies.

THE members of No. 6 Field Ambulance left Montreal on Friday, April 16th, en route for the front. They had been in training for five months. The unit was commanded by Lieutenant-Colonel R. P. Campbell, Major T. F. Murphy being second in command. Among the officers was Captain Andrew Macphail, the editor of this JOURNAL. The other officers were Major Phillip Burnett, Captain R. H. M. Hardisty, acting adjutant, Captain A. B. Walter, Captain D. W. McKechnie, Captain S. G. Ross, Captain H. P. Wright, Lieutenant A. M. Selater, quartermaster, and Lieutenant G. S. Cameron, dental surgeon. The unit comprised two hundred and seventy men.

THE following promotions in the Canadian army Medical Corps are gazetted: Lieutenant-Colonel H. S. Birkett has been made Colonel; Lieutenant-Colonels J. W. Bridges, M. MacLaren and G. L. Foster temporary colonels; Major C. F. Wylde, Brevet Lieutenant-Colonel F. L. Vaux, and Major S. H. McKee temporary lieutenant-colonels; Captains A. C. Rankin, E. M. Vesey, C. H. Morris, J. L. Duval, H. G. Nyblett, A. M. Forbes, and H. E. Munroe temporary majors.

DR. C. M. BURROUGHS, of Sudbury, Ontario, has enlisted for service in the Army Medical Corps.

DR. J. G. ADAMI, who has been appointed to represent Canada on the British commission entrusted with the preparation of a

medical history of the war, has been given the temporary rank of lieutenant-colonel.

DR. C. WILSON, of London, Ontario, is attached to the Red Cross in France. Dr. G. H. Wilson, of London, is the medical officer of the 7th Regiment, Canadian Mounted Rifles.

DR. HOWARD HARRISON, of Toronto, is serving as surgeon on one of the channel transports.

DRS. SMITH, Wickware and Brown, of Moose Jaw, have received appointments in the Royal Army Medical Corps.

DR. CLIFFORD K. ROBINSON, of Tamworth, has volunteered for active service in the Army Medical Corps.

DR. J. R. IRWIN, of Cobourg, has volunteered for active service.

LIEUTENANT-COLONEL D. W. MCPHERSON, of Toronto, is in command of Manor Hospital, Wiltshire, England.

DRS. Irving, Laidlaw, McNutt, Valery, Neff, Jr., Fyshe, Rankin, A. R. Robertson, Harris, H. L. Collins, and W. H. Scott, all of Edmonton, are on active service. Lieutenant-Colonel Harwood is in command of the fifty-first regiment.

DR. W. A. GROVES has been appointed medical officer to the troops stationed on the Exhibition grounds at Toronto, in succession to Dr. A. Croll, who has left for the front.

DR. W. R. MASON, of Parry Sound, Ontario, has volunteered for service with the St. John's Ambulance Corps detachment in France.

THE French-Canadian Stationary Hospital, No. 4, which is being recruited in Montreal, will be in command of Lieutenant-Colonel Arthur Mignault who has done so much in connexion with the formation of the 22nd and 41st French-Canadian Regiments. The personnel of the hospital will consist of a lieutenant-colonel, two majors, four captains, and a quartermaster, with ninety-five rank and file and thirty-five nurses. The following is the list of

officers submitted to Ottawa for approval by Lieutenant-Colonel Mignault: Dr. E. Peltier, Dr. J. N. Roy, Dr. F. de Martigny, Dr. J. A. Lanoie, Dr. F. Pariseau, Dr. C. St. Pierre, and Dr. R. Laurier. Officers and nurses must speak both English and French.

DR. A. CROLL, of Saskatoon, has left for hospital service in France; he will probably be stationed at Havre.

THE following description of No. 2 Stationary Hospital, C.E.F., is taken from a letter bearing date February 17th, and received by Professor Adami from one of his former assistants:

About the last week in January I was instructed to proceed to France, draw the equipment, fit up the laboratory and act as pathologist for the time being to No. 2 Stationary Hospital, Canadians, at Le Touquet. I arrived here February 1st. No laboratory equipment has been drawn, so I asked for and was given a nice bright room, and started to fit it up, which I am still doing. Our supplies are drawn from the English base medical depôt at Boulogne, which is fairly well supplied with chemicals but the big stuff has to be requisitioned specially from England and takes three weeks to a month to arrive. I will, however, if I get all I have asked for, have a very nice little laboratory which I hope to have in full running order long before you arrive.

This unit, No. 2 Stationary, Canadians, is under command of Lt. Col. A. S. Shillington, of Ottawa, and its officers are drawn, with the exception of myself, mostly from the Toronto and Ottawa medical units. The hospital, in time of peace a very fashionable golf club, is a very large four-storey building, and is admirably suited for use as a temporary hospital for various reasons, some of which are: numerous large rooms, well lighted, a profusion of bathrooms and lavatories, electric light, plenty of running water, large sun parlors, extending about three-fifths the length of the building, and numerous villas surrounding it which can be utilized for officers, nurses, and men's quarters. Aside from the suitability of the hotel itself for its present use, it is situated in a veritable paradise. Eight minutes' walk from the sea, it lies among the sand dunes, of which only the two rows running parallel to the shore are bare, or moderately so. About forty years ago some far-sighted individuals planted pine among the sand dunes over an area covering, I should say, a thousand acres, the sand in the small valleys has become grassed over and the pine trees have now reached adult size, the result being that the hotel is situated in a huge park with numerous

drives through the woods. The roads are excellent, having for the most part a stone foundation and tar-cement surface, making them excellent for motoring. So the place is far from being a sandy wilderness. The golf-links are, of course, almost world-renowned. The sea-shore for miles is a sandy beach, on which at low tide you can walk in some places a third of a mile seawards. Two miles away is Paris Plage, a summer watering place, and about the same distance is the little fishing village of Etaples. The country about here is especially interesting in view of the present conflict, as it was at Etaples that Napoleon about one hundred years ago built his flat-bottomed boats for the intended invasion of England. Also it was behind the forest of Hardelot, about eight miles from here on the main road to Boulogne, that he encamped the army which he intended to throw across the Channel. From this you will judge that I have landed in pastures green, and rightly so. The weather since coming here has been good on the whole, but even with a little rain—unlike Salisbury Plain, where one is in mud to the eyebrows continually—the ground being sandy the water drains off in a few hours.

The hospital itself has about three hundred beds, with tent accommodation to double that if necessary. At present on account of the lull in the fighting, we are running light, our old patients are for the most part convalescent and gone. We are not encouraged to keep them long unless they are very seriously wounded, but are continually pressed to evacuate rapidly. When I came we had about a dozen German wounded, but with the exception of a couple they have now been discharged and sent across the channel. On the whole we are very well equipped and find the English dépôt officials eager to give us anything we ask for if it is possible to obtain it. I expect to be doing the laboratory work here perhaps for the remainder of the war. From the present outlook it seems as though I may get time to continue the work I began in Glasgow, as I may have considerable spare time on my hands. I think it will be possible to rig up a rabbit hutch and get some animals, which I am told are very plentiful here. If the authorities give me the equipment I have asked for, I shall be able to do practically anything that comes up.

We lie about twenty miles due south of Boulogne, which is, as you probably know, the British hospital base. Near us are three other hospitals, the Duchess of Westminster's hospital at the Casino, and two French military hospitals both in hotels improvised for the purpose. We often see their patients pass our gates, and a motley

crew they are with their variously coloured uniforms—Turcos, Zouaves and the French infantrymen, who wear a light blue coat and bright scarlet trousers. In Boulogne there are about a dozen hospitals. On Tuesday I paid a visit to No. 13 Stationary, English, where Sir Almwroth Wright has charge of the laboratory. Not having a letter or card from you I introduced myself to him and told him where I came from. He was extremely courteous and showed me various details about the laboratory. He also asked me if, as we were not at present busy, I would like to work in the laboratory with him, but of course I did not accept as I was not sure whether Col. Shillington would care to have me much away from here. The interesting thing in his laboratory, or rather, what I was most anxious to get after, is the work he is doing at present with anaerobes found in shrapnel wounds. The experience in this war, at least with us here, has been that bullet wounds are usually small, clean puncture-wounds, the bullet evidently sterilizing its way through. When it strikes a bone, however, contrary to what I have heard people say, it does not perforate, but smashes the bone into about a dozen pieces at the point of contact. Our x-rays are showing a very large percentage of cases in which this is happening. I have heard considerable talk about dum-dum bullets, but it would seem that the real reason is that the centre of gravity of the bullet is so situated that when it strikes bone, instead of going straight ahead, it flops and smashes everything. There are so many interesting things to write about, but I am afraid you will be tiring of these long epistles of mine. An interesting thing that has been noted here is the number of freaky bullet wounds—bullets in the neck, for instance, which shoot through without injuring the large important structures. One of the officers in No. 13 told me about a case there, a shot wound in abdomen; the bullet entered in one flank, ran across between skin and muscles, and came out the other side.

Shrapnel wounds, on the other hand, are usually more extensive and lacerating, and practically always infected, as clothing is carried in in almost every case. The piece of shrapnel is also usually found deep in the wound. Many of the shrapnel wounds are in the back and legs as the German shrapnel is placed to explode above and behind the English trenches and has a backward as well as a foreward kick. The shrapnel used by the English in the early stages of the war had, I believe, only a forward kick.

Of the actual fighting of course we see nothing and probably will see nothing, unless the Germans break through. The stories of the patients, however, are very interesting.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Canadian Journal of Medicine and Surgery, April, 1915:

Uterine hemorrhage during pregnancy . K. C. M'Ilwraith.

Public Health Journal, April, 1915:

"Live a little longer," the Rochester plan M. E. Bingham.
 Salesmanship and business building . G. W. Allen.
 Some theories and methods of ventilation E. W. J. Hague.
 Abstract of Tellscomian lectures . F. M. Sandwith.
 Relation of psychiatry to public health J. W. S. McCulloch.
 The reception hospital . J. M. Forster.
 Facts in reference to the city (Winnipeg)
 milk supply . A. Rigby.

Western Canada Medical Journal, March, 1915:

President's address to the Manitoba
 Medical Association . H. A. Gordon.
 Puerperal suppurating fibroids . E. A. Hall.

Canada Lancet, April, 1915:

Shortening of the intestinal canal for the
 relief of autotoxæmia . E. A. Hall.
 Camphor as a heart stimulant . F. A. Clarkson.
 Caffein as a heart stimulant . F. McPhedran.
 The relation of the laboratory to the prob-
 lems of mental hygiene . J. G. Fitzgerald

The Canadian Practitioner and Review, April, 1915:

Case reports of bromide eruptions . D. King Smith.
 Subcutaneous injection of oxygen as a
 treatment for tetanus H. O. Howitt and D. H. Jones.
 The library of the Academy of Medicine . H. B. Anderson.
 The present status of the library of the
 Academy of Medicine . J. H. Elliot.
 The new Academy building . R. A. Reeve.
 Mr. Gage and the doctors . J. Hunter.

Medical Societies

ONTARIO MEDICAL ASSOCIATION

ANNUAL MEETING, PETERBORO, MAY 25TH, 26TH, 27TH and 28TH.

Programme

Tuesday, May 25th—Registration.

Wednesday, May 26th—Morning—Registration.

Afternoon—General Session. Business Meeting.

Paper—"The local medical society." Dr. A. F. McKenzie, Moncton.

Evening—General Session. President's Address. Address in Medicine. By Dr. E. C. Rosenow, Chicago: "Variations in streptococci and their elective localizations in man and animals."

Reception by the President, Dr. D. J. Gibb Wishart and Mrs. Wishart.

Thursday, May 27th—Morning—Sectional Meetings.

Afternoon—General Session. Business Meeting. Address by Adam H. Wright, Toronto: "Medical education, specialties and fee-splitting." Address in Surgery.

Evening—General Session. Symposium on Heart.

(1) "Clinical electrocardiography" (with lantern slides), Julian Loudon.

(2) "Syphilis of the heart and aorta," A. McPhedran.

(3) "Treatment of a fever heart," H. B. Anderson.

Friday, May 28th—Morning—Sectional Meetings.

Afternoon—General Session. Business Meeting.

Section of Surgery.

1. "Tendon fixation in infantile paralysis," W. E. Gallie, Toronto.
2. "Local and spinal anaesthesia," J. R. Parry, Hamilton.
3. "Simple goitre and its treatment," F. N. G. Starr, Toronto.
4. "The treatment of arthritis," Dr. Seaborn, London.
5. "The principle of the surgical treatment of exophthalmic goitre," W. J. McDonald, St. Catharines.
6. "Empyema," W. A. Brown, Chesterville.

7. "Surgical aspects of neurasthenia," Dr. Fredericks, Peterboro.
8. "Cancer of the stomach," H. A. Bruce, Toronto.
9. "Abdominal pain," B. Z. Milner, Toronto.
10. "Renal function in surgical disease of the kidney," W. W. Jones, Toronto.

Section of Obstetrics and Gynæcology:

1. "Scopolamine-morphine narcosis in obstetrics," J. G. Gallie, Toronto.
2. "Serious vomiting in early pregnancy," K. McIlwraith, Toronto.
3. "Uterine discharges, their pathology and treatment," E. K. Cullen, Detroit.
4. "Cancer of the uterus, with reference to its early diagnosis," G. S. Cameron, Peterboro.

Section of Medicine:

1. "The relation of the mental hospital to the general practitioner's work," Harvey Clare, Toronto.
2. "The relation of school children to the tuberculosis campaign," J. H. Holbrook, Hamilton.
3. "Serum therapy," W. Goldie, Toronto.
4. "The use of radium and trichloroacetic acid in dermatology," W. H. B. Aikins, Toronto.
5. "Observations on Blood Pressure," Dr. Emmerson, Goderich.
6. "Exophthalmic goitre," Dr. D. Smith, Stratford.
7. "Clinical manifestations of cerebrospinal syphilis," T. G. Phillips, Cleveland, O.
8. "The etiology of tetany—clinical and metabolic studies," Alan Brown, Toronto.
9. "Bowel conditions in epilepsy," Goldwin Howland, Toronto.
10. "Vagotomy and duodenal ulcer," F. W. Rolph, Toronto.

Section of Eye, Ear, Nose and Throat:

1. "The treatment of tuberculosis of the larynx," Dr. Morton, Hamilton.
2. "The use of the electro-magnet in ophthalmic practice," R. A. Reeve, Toronto.

3. "The use of the broncho-tracheoscope and œsophagoscope in treatment," George Biggs, Toronto.
4. "Case reports," F. C. Trebilcock, Toronto.
5. "Ocular manifestations of disseminated sclerosis, with case report," Colin Campbell, Toronto.
6. "Demonstration of accessory sinuses diseases," Angus Campbell, Toronto.
7. "Some unusual features in a case of senile cataract extraction," G. H. Burnham, Toronto.

MANITOBA MEDICAL ASSOCIATION

THE annual meeting of the Manitoba Medical Association was held on February 18th and 19th in Winnipeg. It had been the intention of the Association to hold this meeting in Portage la Prairie during June or July, but for various reasons it was decided to accept the very kind invitation of the Winnipeg Medical Society to hold a combined meeting in Winnipeg during the Bonspiel, which is a great drawing card for Winnipeg. The programme was as follows:—

February 18th, morning session: Demonstration and Operations at Winnipeg General Hospital: Surgical Clinics by Drs. N. J. Maclean, J. E. Lehmann, H. P. H. Galloway, and J. Halpenny. Medical Clinics by Drs. William Rogers and E. S. Popham. Demonstration of Electric Cardiography by Dr. A. J. Burrige. Demonstration of x-Rays by Dr. J. C. McMillan. Demonstration on Pathology by Dr. S. J. S. Pierce, Operations at St. Boniface Hospital.

Afternoon session: Demonstration by Drs. Alexander and Mathers at King George Hospital for Infectious Diseases.

1. Three minute explanation of technique of hospital: (a) Nurses lecture course. (b) Method of case recording.

2. Inspection of building to illustrate the practice of the hospital: (a) Admitting rooms and locker rooms. (b) Ward explanation of technique to prevent cross infection. (c) Operating rooms, prepared for mastoidectomy, intubation and tracheotomy. (d) Diphtheria: outline of treatment with special reference to dosage and mode of use of antitoxin, results obtained. (e) Laboratory: exhibit of "T. B." charts showing relation of Arneth blood picture to clinical facts and prognosis.

Evening session: Clinic at Winnipeg General Hospital: Dr. Hugh Mackay, "Squamous syphilide v. psoriasis." Dr. A. J.

Burridge, "Auricular flutter." Dr. R. D. Fletcher, "Gonorrhœal rheumatism." Dr. S. W. Prowse, "Sinus infection." Dr. G. Hiebert, "Tumour of leg." Dr. D. H. McCalman, "Cæsarian section." Dr. William Rogers, "Disseminated sclerosis." Dr. H. P. H. Galloway, "Shoulder case." Dr. J. E. Lehmann, "Fracture of glenoid cavity." Dr. N. J. Maclean, "Ulcer of stomach." Dr. J. Halpenny, "Hernia." Dr. James McKenty, "Jacksonian epilepsy." Dr. E. S. Popham, "Filaria." Dr. D. F. McIntyre, Case of sarcoma of uterus and ovaries treated with Coley's fluid and x-ray.

February 19th, Clinic at Children's Hospital: Dr. Raymond Brown, (1) Congenital cataract, needling; (2) Congenital atresia of nostril; (3) Three cases of tonsils and adenoids. Drs. Rorke, Tees and Richardson, (1) Feeding cases, including atrophy, rickets; (2) Congenital syphilis; (3) Double basilar pneumonia; (4) Obstretical paralysis; (5) Cluttons joints; (6) Splenomegaly. Dr. Hughes, (1) Ichthyosis with eczema; (2) Psoriasis. Dr. H. P. Galloway.

Afternoon session: Business meeting of Manitoba Medical Association. Presidential Address by Dr. H. A. Gordon, Portage la Prairie. Dr. Stewart, of Ninette Sanatorium, "Artificial pneumothorax in pulmonary tuberculosis." Dr. A. B. Alexander, of the Municipal Hospitals, opened the discussion.

Evening session, Clinic at St. Boniface Hospital: Dr. Howden, Osteosarcoma of the jaw; Dr. Meindl, Syphilitic osteitis of tibia; Dr. Rice, Cerebral syphilis (two cases); Dr. D. McKenty, Hypopituitarism; Dr. F. D. McKenty, Result of excision of tarsus for trachoma; Dr. Musgrove, Enterostomy for acute obstruction; Dr. James McKenty, (1) Aneurism of the common carotid; (2) Partial colectomy; Dr. Richardson, Double empyema; Dr. Lachance, (1) Atypical amputation of arm; (2) Postoperative hernia; Dr. Mackenzie, Bone-grafting for fracture of arm.

The visit to the new King George Hospital for infectious diseases, which is owned and operated by the city, was very much enjoyed by all those who made the trip. The significance of the Arneth blood picture in relation to clinical facts and prognosis in cases of tuberculosis in the King Edward Hospital (adjoining) was made very evident by Dr. Mathers.

The evening meetings were good, and discussion in some cases was very spirited. On the afternoon of February 19th, Dr. D. A. Stewart, superintendent of the Ninette Sanatorium, gave a most interesting talk on artificial pneumothorax, as it had been practised at Ninette. He was of the opinion that in suitable cases

this procedure was of great value. In his Presidential Address, Dr. H. A. Gordon reviewed the advances in medicine and forecasted future advances, especially in the fields of serotherapy and organotherapy.

The election of officers for the year resulted as follows: president, Dr. J. S. Poole, Neepawa; first vice-president, Dr. A. P. MacKinnon, Portage la Prairie; second vice-president, Dr. L. J. Carter, Brandon; secretary, Dr. Ross Mitchell, 702 Boyd Building, Winnipeg; treasurer, Dr. T. Glen Hamilton, Winnipeg; executive committee: Drs. Charles Hunter, Winnipeg; George Clingan, Virden; W. J. Harrington, Dauphin; W. H. Rennie, Portage la Prairie, and T. R. Corbett, Crystal City.

The next meeting will be held in Portage la Prairie in April, 1916.

PRINCE EDWARD ISLAND MEDICAL ASSOCIATION

THE mid-winter meeting of the Prince Edward Island Medical Association was held at Charlottetown on Friday, February 19th, under the presidency of Dr. Jardine. The meeting was well attended and among those present were Drs. Alexander McNeill, A. A. McLellan, E. E. Sinclair, and E. T. Tanton, of Summerside; Jenkins, Conroy, Carruthers, Warburton, Yeo, McMillan, Ledwell, Garrison, and Dewar, of Charlottetown; A. A. McDonald, of Souris; F. W. Jardine, of Kensington; W. F. Taylor, of Montague. Dr. Jenkins announced that the provincial government was prepared to fit up the bacteriological and pathological laboratory and that members of the association would be consulted as to the equipment necessary. The thanks of the association were tendered to the government. Among the papers read were "The pathology and cause of diabetes," by Dr. Taylor, and "The sanatorium and its relations to the physician and the public," by Dr. Garrison. Case reports were presented by Drs. Tanton and McLellan. It was resolved that a fee of \$1.25 be asked from the members of the association towards the relief fund of the Belgian medical and pharmaceutical professions. Dr. Jenkins was requested to prepare a history of medicine in the province of Prince Edward Island.

TORONTO ACADEMY OF MEDICINE

THE surgical section of the Academy of Medicine held its February meeting in the Hospital for Sick Children, with the President of the Academy in the chair. The programme, a clinical

one, was provided entirely by the hospital staff, and those who attended were rewarded by a most profitable evening.

Dr. Gallie showed a series of x-ray plates exhibiting various fractures in the neighbourhood of the elbow in children together with some of the patients. Among these he found that sometimes the lower humeral epiphysis was rotated as well as displaced backwards. An epicondyle which has been completely separated will frequently be found on operation to have the fractured surface next the skin.—Dr. Gallie believes that stiffness of the elbow after such fractures is due to improper reduction. His treatment is to put the arm up fully flexed and leave for four or five weeks. The limb is then freed and no attempt made to produce passive motion. The arm is simply let alone as far as the surgeon is concerned and no bad result will follow, provided of course the alignment has been correct. Dr. C. L. Starr emphasized the remarks of Dr. Gallie.

Dr. Alan Brown read notes from eleven cases of congenital hypertrophic stenosis of the pylorus which had been treated in the hospital since July last. Among these the mortality was 40 per cent. but when it is considered that two were moribund at the time of admission and one died six weeks later from enteritis, the real death rate was only 10 per cent. which indeed was a very remarkable showing. All gained weight after the operation, the vomiting being checked in about two weeks. The operative procedure was that of Webber in which the pylorus is hooked into the abdominal wound and incised longitudinally down to the mucosa which bulges into the wound. When the hæmorrhage has been controlled the abdominal incision is closed. There is no shock following such a procedure, which is in marked contrast to gastro-enterostomy. The after-treatment is very important and breast-feeding is practically essential for success. The average weight of these patients before operation was 6 pounds, 6 ounces. Dr. Brown divided the cases into medical and surgical, depending upon the amount of food which could be aspirated from the stomach after a four-hour interval. There can be no doubt about the condition in premature infants. Dr. Brown showed four babies which had been operated upon, two of which were recent cases and still in hospital. Dr. Starr said that before Dr. Brown came the mortality was nearly 100 per cent. from gastro-enterostomy. He gave in detail the operative treatment. Dr. Gallie showed for comparison a cross section of a normal and hypertrophic pylorus, also a cross section of a pylorus which had been longitudinally

incised. No fibrous tissue was visible, the hypertrophy being purely smooth muscle.

Dr. Gallie then exhibited a number of x-ray plates showing Pott's disease in early stages. He showed one boy with high dorsal Pott's and low cervical treated with a Minerva jacket. The great advantage of the latter lies in the fact that the lower jaw can be moved, consequently the vertebral column remains fixed. The jacket is kept on for three years, a new one being put on every six months. He also showed a patient with lumbar Pott's whom he had treated by a modified Albee's operation. He had prepared beforehand a piece of bone from an amputation, bored holes corresponding with the lumbar spine and then boiled it. This at operation was splinted to the vertebræ with so far excellent results. Dr. Starr pointed out that Dr. Gallie's method required very careful measurement to get the splint to fit the holes in the plate and suggested cutting a trough in the middle of the splint and fitting it on.

Dr. Starr exhibited a man upon whom he had operated some two years ago for ankylosis of both hips following a pneumococcic infection three years previously. The operations were two months apart and chemicized pig's-bladder was used to cover the part of the femoral neck left after chiselling the part loose. While he did not claim a brilliant result, still the patient was immeasurably improved as he could now walk about and sit with a fair degree of comfort.

Dr. Starr then demonstrated some congenital club foot cases. He pointed out that manipulation should be commenced three weeks after the child was born and the only one capable of doing this was the surgeon. Plaster of Paris was used as a retention apparatus. The manipulation must be done gradually and first the varus must be corrected. One must be sure to over-correct the deformity. After the correction a splint is worn at night for five or six months after the patient is able to walk. He also showed the cast of a man aged thirty-five with double club foot. The foot was tremendously turned in at the neck of the astragalus. What he did was to excise the head and neck of the astragalus and then excise a wedge out of the outer side of the os calcis. In that way no joint was destroyed, an improvement upon the Davies-Colley operation.

Dr. Bruce Robertson explained the Lindeman method of blood transfusion. The syringe is boiled in liquid paraffin and blood is taken from a vein of the donor and injected directly into the recipient. It is best to cut down and expose the veins in each

case. If there is any tendency to clotting in the needle it is cleared by saline. He showed a child upon whom he had so operated for hæmophilia, which, however, came back again in two months. The mother's blood was again transfused but with no better result. The house surgeon now volunteered to give some blood, which was attended with better results. Dr. Primrose, who had been asked to discuss the procedure, referred to methods of transfusion which had been used in the past. The Crile method was very difficult and in one of his experiences the radial artery of the donor was atheromatous and could not be utilized. With this method one knew exactly how much blood was being put in while with Crile's this was not the case. All he uses is a syringe with a cannula and connecting piece of rubber tubing. The blood can be very rapidly emptied into the recipient and about seven or eight hundred cubic centimetres is an average dose. Of course, the blood should be tested previously as to agglutination and hæmolysis. He recited a case of pernicious anæmia with a very rapid increase of both hæmoglobin and red cells after a single transfusion. Dr. Powell referred to the fact that Dr. Hodder years ago in Toronto transfused patients to counteract effects of cholera. Dr. H. B. Anderson thought that on account of the frequent sudden changes in the pernicious anæmia blood picture it was not possible to refer such a change to blood transfusion.

Dr. Gallie showed lantern slides illustrative of known fixation for various forms of paralytic club foot and also some patients upon whom he had operated with most gratifying results. He likewise showed some patients with Erb's paralysis or birth palsy. In view of the fact that the nerves are usually only stretched his treatment was to put the arm up abducted with the elbow at right angles to stretch the contracted muscles and at the same time relax the paralyzed ones.

Dr. Starr exhibited some patients illustrating congenital dislocation of the hip and the Lorenz method of treatment. He also showed some fractures of the femur. He found no difficulty in getting the oblique fractures in position by traction, and exhibited the table used for putting on extension. The transverse fractures, however, were the difficult ones and these he had usually to cut down upon. He did not, however, find it necessary to plate them. Dr. Gallie showed a boy with fracture of the femur upon whom he had put a bone plate with bone screws. He also showed slides of a transverse fracture treated by a sliding wedge with parallel sides cut into the medulla. Then the narrow end is partly

excised and the wedge driven onwards. [The method is described and illustrated by Dr. Gallie in the JOURNAL, February, 1915.]

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE sixth regular meeting of the society was held Friday evening, December 18th, 1914, Dr. W. F. Hamilton, president, in the chair.

LIVING CASE: True (mirror picture) dextrocardia in situs inversus, illustrated by radio- and electro-cardiographs. By Dr. Maude E. Abbot and Dr. J. C. Meakins.

Dr. Abbott: This patient came under my observation when he was sent to the Medical Building by Dr. Vipond to see if any of the medical teachers wanted to show him to the society. Later I brought him to the Royal Victoria Hospital where Dr. Pirie took x-ray plates and Dr. Meakins electro-cardiographs of him. One hundred and twenty-five cases of this condition have been collected from the literature and studied by Kuchenmeister. Complete situs inversus has to be distinguished from a condition in which the heart is on the right side of the body but the remaining viscera are normal. In true situs inversus, which is the condition seen in this patient, all the organs are transposed. The patient is apparently perfectly normal, thirty-seven years of age, and enjoys good health. He entered military service at an early age, served through the Boer War, and it was only during this campaign when he took typhoid fever that his condition was discovered. He had himself diagnosed his own condition, however, some years previously by noting that his heart beat on the right side. Kuchenmeister gives a very good series of diagnostic points in complete situs inversus. As everything is transposed we get all the conditions normally prominent on one side of the body prominent on the other. The measurements of the head and neck are normally larger on the right side, here this is so on the left; the right thorax is usually somewhat larger in circumference than the left, in situs inversus the opposite is the case; also vocal fremitus is here increased on the left side instead of on the right. Coming to the condition of the dorsal vertebræ the curvature is here slightly reversed. Dr. Meakins has very kindly mapped out the percussion dulness of heart, liver and spleen, showing the heart entirely transposed, and the apex beat quite clearly to be made out in the fifth right interspace. The liver is on the left side. These points are confirmed by the x-ray plates. An interesting diagnostic point is that the

tympany over the cæcum on the left side is very clear as compared to the dulness over the ascending colon and sigmoid flexure on the right. Another point also presented here is that the right testicle, which is normally higher on the right, is higher on the left side. As to left-handedness these cases are sometimes left handed but not invariably so. This patient is not left handed but his muscular strength is better in the left hand; his left foot is also the stronger.

There are two conditions in which the heart is on the right side which have to be differentiated from the dextrocardia of complete situs inversus. One is a congenital defect in which the apex lies to the right and occupies the same position, but the other organs are in their normal situation. Congenital dextrocardia of this type is a totally different condition from that before us, and is usually combined with other cardiac defects, the condition being due here to a true arrest in development; in the heart of these cases we see this difference, that though the apex points to the right it is not formed by the left ventricle (as it is in the case of complete situs inversus before us) but by the right ventricle. There are thus two distinct types of congenital dextrocardia in one of which (situs inversus) the apex is formed by the left ventricle, and in the other (congenital dextrocardia, without situs inversus due to arrest of development) the apex is formed by the right ventricle. There is a third condition in which the heart is found on the right side because it has been pushed over by some pleural condition (dextroversio cordis). We have now the means of diagnosing clinically the dextrocardia of situs inversus from the dextrocardia due to arrest of development and from a simple dextroversio cordis, and that is by the electro-cardiograph.

Dr. Abbot exhibited the x-ray plates and lantern slides, illustrating the various types of dextrocardia and Dr. Meakins the cardiograph tracings.

CASE REPORT: Pulmonary embolus following coronary thrombosis, by Dr. J. A. Hutchinson and Dr. L. J. Rhea.

PAPERS: 1. The present status of the bacteriology of Hodgkin's disease, by Dr. L. J. Rhea.

DISCUSSION: Dr. A. E. Vipond: Dr. Rhea's paper is of peculiar interest to me. For the past nine years I have made a study of the glands of the body. About eight years ago I read a paper at the British Medical Association meeting in Toronto, and at that time stated that the lymph nodes were enlarged in all infectious diseases and that the microorganisms peculiar to each

infectious disease would be found in the lymph nodes and that the portal of entry was the tonsil. Some years ago I satisfied myself that I had produced scarlet fever in monkeys by inoculating them with a culture of bacilli obtained from the nodes of scarlet fever patients; and further recovered the same bacilli from the nodes of the monkeys who had developed scarlet fever. In regard to the organism which had been obtained from the enlarged glands of patients suffering from Hodgkin's disease two years ago under strict antisepsis I obtained a short bacillus from an enlarged node of a patient who suffered from lymphatic leukæmia. I inoculated a healthy macacus rhesus monkey with a culture of this bacillus and in twenty-four hours the nodes were swollen, at the end of forty-eight hours he had ecchymosis in the skin and in five to six hours the monkey was dead. Death was likely due to an overdose of the culture. I had a vaccine made for my patient and in twenty-four hours after inoculation the nodes were reduced to half their size and in about ten days' time he returned to his work as an iron moulder. At this time I left home and the treatment was neglected, the patient dying in about six months' time. In a second case I only got cocci from an enlarged node; however, if I had been allowed to persevere I might have obtained the same bacillus.

Dr. J. G. Adami: I admire the cautious way in which Dr. Rhea has brought forward this subject of the etiology of Hodgkin's disease. When a man has succeeded in isolating an organism, as he has done, from a particular disease, it is distinctly hard not to feel some little affection for that organism and not to conclude that it must be the causative microbe. It shows strong powers of self-restraint to speak so cautiously as Dr. Rhea has done. It must, however, be admitted that these diphtheroids are becoming a positive plague; of late years they are constantly turning up, and that in all sorts and conditions. It is but a few years ago that certain bright Edinburgh observers caused a temporary stir by isolating diphtheroid organisms in a series of cases of general paralysis of the insane; one friend, who is now President Westbrook, of the University of British Columbia, isolated a similar organism from a case of rabies. He was careful to impress upon his readers that he could not regard this as the causative agent. Another Canadian worker, Hamilton Wright, called attention to the presence of the diphtheroid bacillus in the alimentary tract in the early acute stage of beri-beri. Here in connexion with Hodgkin's disease it is certainly more than a little suggestive that this type of organism has been found by so many workers in so many cases. I have for

long years accepted the conclusions of members of the Johns Hopkins School that the lymphatic enlargements of this disease are not primarily of the nature of a neoplastic growth, but bear the earmarks of a low form of chronic inflammation. And holding these views I confess I have been prepared to welcome the discovery of a bacterial or other microbic agent. Nay, more, I remember how Duval, here in Montreal, produced a condition in the rabbit which was like Hodgkin's disease, by inoculating animals with an attenuated tubercle bacillus. I was ready to accept those results from the fact that in bovine tuberculosis the bacillus especially affects the lymphoid tissue, producing an extraordinary enlargement of the lymph nodes. It is not a little interesting that attenuated tubercle bacilli grown for a long period in the laboratory take on the characters of diphtheroid bacilli. Thus I have still hopes that this organism of Bunting, Rhea, and others, may eventually be demonstrated to have a causative relationship to the disease.

Lastly, a few words in relationship to productive inflammations. I have, as many here may know, for many years laid stress upon the capacity possessed by bacteria of a low grade of virulence to stimulate cell growth and induce cell multiplication instead of setting up cell destruction. Nay, more, I have laid down that if the irritation be long enough continued, these proliferative cells may take on the habit of growth, and now irrespective of the initial microbic cause, may continue to multiply, in this way setting up a neoplasm. It seems to me that the lymph nodes in Hodgkin's disease afford good examples of both of these stages. In some cases the low inflammatory changes predominate, in others we see undoubtedly that a further stage has been developed, of true sarcomatous development.

2. The bacteriology of puerperal blood, by Dr. J. J. Ower, read by Dr. J. G. Adami, discussed by Drs. Little and Adami.

3. Static joint disease, by Dr. J. Appleton Nutter.

THE seventh regular meeting of the society was held Friday evening, January 8th, 1915, Dr. W. F. Hamilton, president, in the chair.

PATHOLOGICAL SPECIMENS: Series by Dr. Horst Oertel.

1. This specimen of a liver which I present herewith is interesting on account of the rarity of the lesion and the very unusual way in which it led to the death of the individual. It is from a middle-aged man, admitted to the hospital late one afternoon with

a tremendous ascites; not much else could be made out. He was tapped that evening and stood it well, but during the night suddenly collapsed, pulse became feeble and he died very shortly after the first symptoms. At autopsy was found, in the first place, in spite of tapping, a very large amount (4 litres) of ascitic fluid, which was deeply hæmorrhagic, so much so that the ascitic fluid looked almost like blood. Investigating the source of that tremendous ascites and hæmorrhage, attention was immediately attracted by the liver which impressed one as a typical hob-nailed liver. It was natural, therefore, to suppose that the fatal hæmorrhage was due to rupture of a varicose vein somewhere into the abdominal cavity. However, that proved wrong for it was found that the under surface of the right lobe of the liver was the seat of a definitely protruding globular tumour mass which on palpation was found so soft as almost to fluctuate. The under surface of this mass was distinctly umbilicated; the centre of this umbilication had become necrotic and perforated. In this way had occurred a hæmorrhage from the liver into the ascitic fluid, a bleeding which was quite sufficient to account for collapse and death. On further investigation the mass was found to be a distinctly circumscribed and necrotic growth occupying a large part of the right lobe of the liver, taking its origin apparently from the liver substance and surrounded by definite fibrous connective tissue which also travelled through the mass. No other growth or metastases were found in the body.

The possibility of a primary carcinoma of the liver was entertained and this proved to be correct. As you know, primary cancer of the liver is of great rarity, most cases take their origin, as this one, on the basis of a cirrhosis and often from the nodular hypoplasias which occur in cirrhosis of the liver. They also display, as this tumour did, tendency to necrosis and penetrate into veins and ducts, but very rarely soften at the outside with perforation and fatal hæmorrhage into the abdominal cavity. There was in addition a very large spleen quite typical of one usually found in liver cirrhosis.

2. In the second case I have no organs to show, only some slides of the condition, which is rather interesting. It concerns a young man, an athlete of thirty-five years of age, who seemed in perfect health, was married and had healthy children. He had been examined by a life insurance physician a year ago and had been recommended and accepted as a splendid risk. He went on the night of his death to a rather exciting wrestling match and during the heat of the match, while shouting, he was seen to grow pale and dropped;

in less than twenty minutes he was dead. The coroner issued a certificate of heart failure but the insurance company not being satisfied with that demanded a post-mortem. This was done but, unfortunately, after the body had been injected and late at night. At the time of the autopsy I found nothing grossly, although particular attention was paid to the circulatory system—possibility of status lymphaticus, etc. Everything appeared that night in perfect shape, but I took the heart with me and made sections of it because the whole history of the case and negative gross findings pointed to the possibility of heart block. Microscopic examination showed that the man had a very marked fibrous myocarditis, particularly in the interventricular septum of the heart. Fibrillar non-cellular tissue had replaced much musculature. It was interesting to get some facts in the history later which threw some light on this case. We found that the physician who examined him for insurance had made a note that *there was slight irregularity of the heart's action*. However, this is so frequent that no attention was paid to it, but the week before the fatal accident the patient and his wife had attended a similar wrestling match and during the excitement of that match he had fainted but had regained consciousness. In other words he had at the time probably a partial heart block from which he recovered, but at the last attack there was no recovery. It may, I think, be reasonably supposed that the man had gone through some infectious disease earlier in his life, possibly diphtheria—which as you know is extremely liable to leave some heart affection, though, fortunately, in the majority of cases this does not involve absolutely vital parts of the heart. In this case the location was particularly unfortunate in taking up that musculature of the heart which is essential for the conduct of motor impulses. Dr. Oertel showed the microscopical sections of the fibrosis through the musculature.

CASE REPORTS: 1. Portal thrombosis in typhoid fever, by Dr. J. A. C. Tull and Dr. E. W. Archibald.

DISCUSSION: Dr. A. E. Garrow: I would like to ask if Dr. Archibald lined his glass tubes with any preparation of paraffin before inserting them to prevent coagulation and blockage.

Dr. E. W. Archibald: It did not occur to me that it would be necessary with ascitic fluid. One tube stayed perfectly smooth and clean for three months.

2. Stab wound of the liver, by Dr. F. T. Tees.

PAPER: The so-called backward displacements of the uterus, by Dr. W. W. Chipman.

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